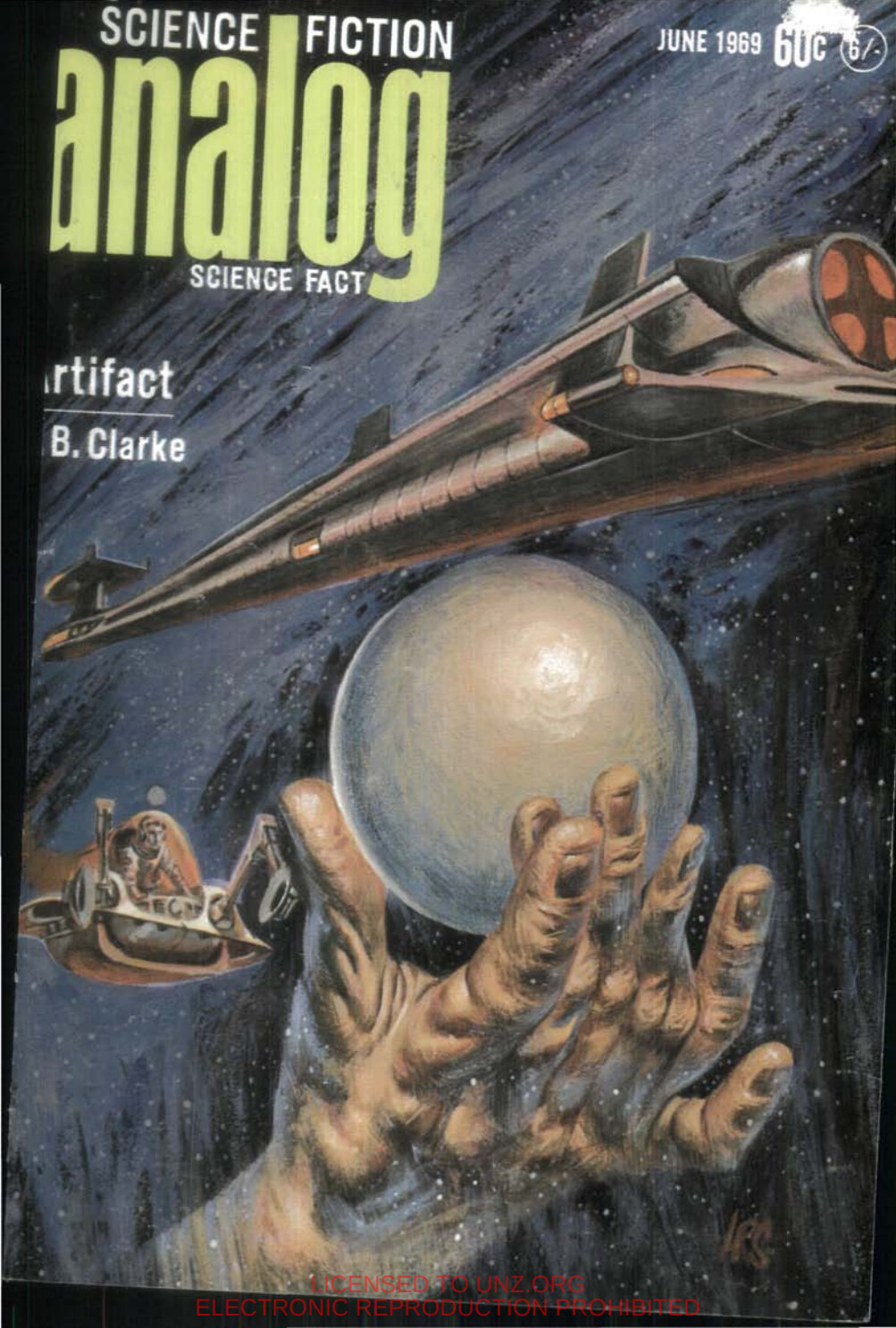

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THE SIMPLE WAY

an editorial by
John W. Campbell

One of the hardest mental tasks of all is that of seeing the simple way to do something—the easy, direct, and cheap way.

Perhaps the problem is like that of a sharp, high-resolution lens—for seeing the simple way to do something requires the ability to define, with exact precision, what it is you are, in fact, trying to do, and recognizing what tools and/or methods you have available in currently-available technology. Precise, high-resolution thinking is most remarkably difficult. As I say—like lenses. A milk-bottle bottom does constitute a lens; it will—more or less—focus sunlight. Pressed-glass lenses are cheap, and can be used in cheap simple cameras. But those pieces of glass jewelry they put on the front of high-precision professional cameras are something else again.

The result of either high-resolution thinking, or high-resolution lenses, appears clear, simple, readily understandable. And frequently, the high-resolution idea has the effect of making one, on hearing it, say, "Oh, for Lord's sake—why didn't *I* see that was the obvious answer?"

I don't know who first said that "Science is the business of making the self-evident obvious," but the statement applies only to the very finest, the very highest level, of human thinking. Most "science" is over-complex—hard ways of doing things.

In the last few weeks I've encountered two magnificent examples of Elegant Solutions—answers to questions that men have struggled with for decades, now solved with a simplicity and ease that makes the outsider wonder, "What took 'em so long, huh?"

Item the first: This one science-fictioneers rate a straight F grade on; we, of all groups, should have seen this as the obvious answer! The problem: A practical, workable spacesuit. This is a problem that science-fictioneers have been mulling over for some forty years, and professional scientists have been gnawing at it—in the form of a workable high-altitude suit for fliers—for some thirty years.

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The spacesuits currently being used, as of 1968, are highly unsatisfactory. You've seen the astronauts moving from their carrier on the field to the space capsule that's to take them into orbit, each lugging along a suitcase-size air-conditioner to keep his suit from causing him to drop because of heat prostration. Those suits are beautifully insulated —they won't let heat out, and a man generates considerable heat-energy, even when he's sleeping.

The efforts of several men at Extra-Vehicular Activity—EVA —have shown that a man in such a suit can dangle inertly at the end of a cable, supplied with cooled air from the capsule, quite successfully. But as soon as the man tries to do something remotely useful —like collecting a micrometeorite panel, or even take pictures, let alone something fairly vigorous, like get into a self-propelled backpack and move around to try out space tools—he's in trouble. They've "dropped" the micrometeorite panel, lost a Hasselblad camera, and failed to get the backpack mounted—because of overexertion, clumsiness, and near heat-prostration brought on by the suits.

The spacesuit consists of several things: a gas-tight membrane, to hold the breathable atmosphere; a strong fabric to resist the pressure of that gas pressure; an oxygen supply system with pressure regulators; and a temperature-humidity regulation system.

What's stopped our astronauts is the fact that the said gas-tight membrane, when inflated with gas, tends to act precisely like one of those figure-balloons in Thanksgiving Day parades. Inflate it, and the gas pressure holds it out rigidly, looking like Mickey Mouse with his arms and legs spread-eagled. It takes force to bend one of those inflated-balloon arms or legs against the internal air pressure. It takes continuous force to simply hold your arms together in front of you, a continuous forceful fight against air pressure trying to spread-eagle you.

This heavy work load is involved in *anything* you do other than relaxing in whatever configuration your surrounding balloon happens to want.

The work load increases your energy output, and causes a rise in temperature. The increase in temperature induces sweating. Then, of course, the sweat overloads the lightweight cooling system in the spacesuit, so that humidity goes up, lenses fog over, more perspiration pours out because the body hasn't been sufficiently cooled. Heart rate rises, trying to dissipate the heat of activity—and the astronaut, seriously handicapped in dexterity by the suit to begin with, drops what he was trying to work with, and crawls back into the capsule. There he can take off his one-man Turkish bath, cool off, and get his heart rate back somewhere like normal.

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By this time, he's thoroughly exhausted, the assigned work wasn't done, his opinion of spacesuit designers is no longer printable, and he's feeling somewhat disgusted himself.

Let's try again. This time we'll do it the simple way, use an Elegant Solution. Do what the science-fiction writers of the last forty years failed to do—define the problem acutely.

1. A man needs oxygen; therefore, his outfit must supply oxygen for his lungs.
2. His skin doesn't need oxygen.
3. Human skin is, in fact, a remarkably gas-tight membrane. Because it is, you can walk into a room full of deadly gases such as cyanide, chlorine, or carbon monoxide wearing only an oxygen mask.
4. Therefore, there's no reason why a spacesuit should be a gas-tight system itself; the skin is a perfect one.
5. Moreover, some hundreds of megayears of evolution have, somehow, devised a system that permits an internal higher pressure—blood pressure—without stiffening or spread-eagling effects. It's an exceedingly sophisticated system that we can't quite match—but we can use it.
6. However, the skin did not evolve in a zero-external-pressure environment; it isn't stressed for the high pressure-difference loading that would produce.
7. But the skin *is* designed as a temperature-regulating system—and is an extremely efficient one.

Conclusion: Who needs a gas-inflated spacesuit? All we need is a breathing mask, and something to supply support to the already-present gas-tight membrane of the skin!

I don't know who first saw that Elegant Solution, but International Latex Corp. and David Clark & Co. are both developing versions for NASA.

It's an elastic "space leotard" with a helmet for breathing. Since skin is gas-tight, the suit doesn't have to be gas-tight—and, therefore, doesn't have to be perspiration-tight. The spaceman in EVA work no longer is hampered by trying to manipulate from inside a gas-stiffened balloon, he can sweat and be cooled thereby—sweat evaporates magnificently in a vacuum, of course! Use the superb self-regulating cooling system built into all highly evolved mammals, and leave the mechanical contraptions on Earth.

The function of the leotard then is simply that of a mechanical restraint to brace the skin against the internal pressure.

Think of it in these terms: A thousandth of an inch film of polyethylene is gas-tight, but if you

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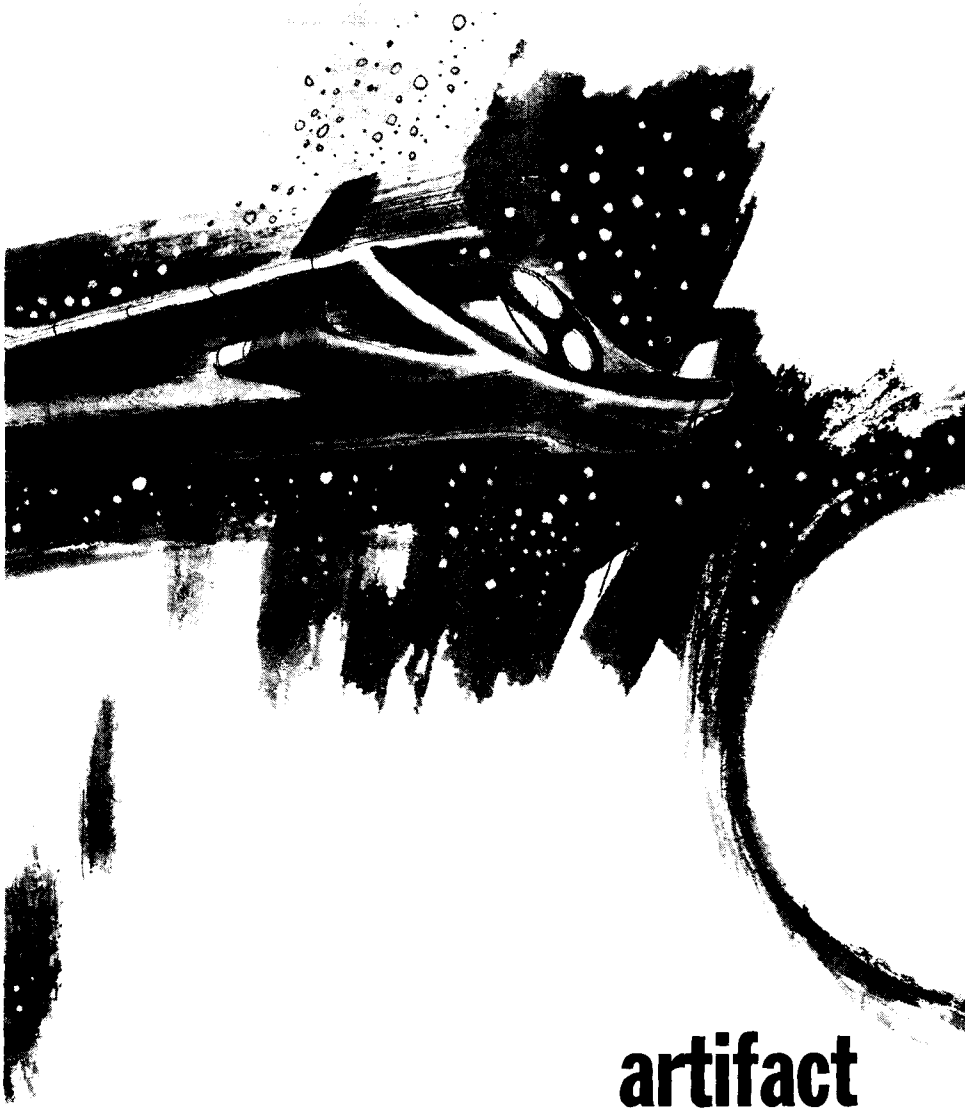

artifact

The gadget found in space
was indubitably of immense value.
But there was some question whether it was bait
of a trap to destroy Man—or fulfill him.

J. B. CLARKE
Illustrated by Leo Summers

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The chairman of the Investigation Committee glanced at his notes, then at the firm-jawed man seated in the witness chair.

"Captain Isaac Speckmann? Of the Federation deep-spacer, *Goddard IV?*"

The witness nodded. "Yes, sir."

"And you have just returned from where?"

"Jupiter."

"Your mission being . . . ?"

"Close-orbit research. We also carried the relief crew for the Ganymede Dome."

"Thank you. Now then, Captain, please describe for us the events which involved you and your ship on June 6th last."

Speckmann pointed. "You already have my report there, Mr. Chairman. I hardly think . . ."

"We of this Committee are neither scientists nor astronauts, Captain, so I trust you will leave the examination of your report to experts. We ask only a reasonably concise outline in reasonably untechnical language."

Speckmann's rather grim face relaxed into a slight smile. "I see." He paused a moment, his brow furrowed with thought. Then:

"We were on our way home, and at about Mars' orbit, when our instruments first detected the thing. Apparently a mountain-sized planetoid, it was paralleling our course about four thousand kilometers sunward. Of course, a thing that large should have been detected long before. It should also have been picked up by the ship's optical tracking systems and automatically displayed on the control-deck viewscreen. But this object seemed strangely invisible, even under full magnification. So I ordered my navigator to program an intercept, hoping that a fairly close pass would solve the mystery. But before I could initiate the intercept, the thing anticipated me by changing its own course.

"My immediate reaction was to assume it was an Earth-originated homing carrier. It was certainly behaving like one, and that monstrous radar echo could have been some technical innovation to aid detection and recovery. But when it got within visual range, it turned out to be, not the twenty-foot cylinder I expected but, a small sphere about the size of a beach ball. It closed to eighteen hundred meters and then changed course again; this time to maintain an exact station relative to the ship. We spent the next hour probing the thing with just about every frequency in the book, but still got readings which insisted it was an object at least six hundred meters across. On the screen, meantime, we saw only that damned beach ball."

"In your opinion, what caused those peculiar readings, Captain? An energy screen, perhaps?"

Speckmann shrugged. "Whatever it was, it was opaque to everything except the visual spectrum. Any-

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way, I decided to go out myself and look the thing over."

It was the chairman's turn to smile. "And then, I gather, the . . . ah . . . fun started."

"Fun?" The witness grimaced. "More like a blasted nightmare. It let me ride an EVA work platform almost to within grappling distance, then disappeared—just like a pricked soap bubble. And while I was out there glaring at nothing, I got a call from the ship. At the same instant I saw the sphere vanish, it had apparently reappeared more than two hundred kilometers away."

"Did it close in again?"

"No, sir. It just stayed there as if daring us to do something. So we did—and got the ship to a position where the sphere was a little more than a hundred meters from the hull. Perhaps I should mention that our nav computer fired every alarm on board when we got close to the thing. I suppose it thought we were going to collide with a planetoid . . ."

The captain added, straight-faced. "What it thought when we wound up a couple of hundred meters *inside* the planetoid, I can't imagine."

"Was that when you attempted retrieval?"

"I went out again, though not with retrieval in mind . . . yet. As before, my purpose was simply to try and make sense of the object and its antics. And, as before, it vanished as soon as I got close, again reappearing at a distance of two hundred kilometers. So I went back to the ship and we tried again."

"Being a little free with your ship's reaction mass, weren't you, Captain?" challenged a member of the Committee. "Seems to me, curiosity is hardly a strong enough motive for such risks."

Speckmann bristled. "It was a damned sight more than curiosity!" He stared angrily at his inquisitor. "Part of my responsibility is to investigate anything which even remotely could be considered a hazard to normal space navigation. And in case you already do not know, sir, *Goddard*'s fusion-ion drive is a good deal more efficient than any other system currently in use. I do *not* take unnecessary risks with my command!"

The chairman coughed. "Your point is noted, Captain. Please continue."

"This time," Speckmann continued, "I decided to see what would happen if I stayed on board and brought the ship right up to the sphere. I had no reason to assume the thing would behave any differently, but frankly I was getting a little tired of going EVA for nothing."

Suddenly, he chuckled. "The sphere's only reaction, was to stop reacting."

The chairman frowned. "I beg your pardon?"

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"Believe me, that is exactly what happened. At four hundred meters, whatever had caused our wild instrument readings either failed or was shut off, and everything suddenly matched what our eyes had told us all along. I was then able to maneuver the ship close enough alongside so a couple of crewmen were able to snag the thing with a retrieval net as it drifted by the cargo lock. I had them lash it to the deck plating in the cargo module."

"That was all? No further problems?"

"None. The sphere remained as inert as this table."

"But you still had ninety days before arrival in Earth-orbit," a second member of the Committee pointed out. "Weren't you tempted to tinker with the sphere during that time?"

Speckmann nodded. "I was," he admitted. "Extremely so. But Space Control gave me strict instructions otherwise, so I contented myself with a few holograms."

"Which have already been submitted to this Committee," announced the chairman. He held up an envelope. "Thank you, Captain. You may return to your seat. Will the next witness please come forward?"

At about the time Abraham led his people out of Ur, the representatives of three star-spanning civilizations met on the airless planet of a minor star near the edge of the galaxy. Recognizing the explosiveness of a situation in which competitive cultures were expanding into the same regions of space, they established a common authority to govern all future exploration activities. Thus the Galactic Web was born, a relatively minor beginning which later grew into a federation encompassing thousands of suns and hundreds of cultures. As explained by one of its founders, the tripod being from Combhra V, their agreement was based upon three prime principles only. But these principles, as fundamental to the new organization as atoms to matter, were the rock upon which Galactic Law was to be built. Later known as "The Three Mutuals" they stipulated:

Mutual cooperation between members.

Mutual noninterference in the affairs of developing cultures.

Mutual defense against aggression.

The first was obvious, the third rarely invoked. It was, not surprisingly, the second "Mutual" which proved the most controversial, especially to civilizations still in their stage of competitive development. Machiavelli had his counterparts on a thousand worlds, and it was never easy to abandon political practices which had created and sustained empires.

Nevertheless the Web grew and prospered, expanding across the

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Spiral Arm and even to lonely suns in the Great Rift. But Parkinson's Law inevitably came into play, causing the Web's bureaucracy to grow even more. Like an administrative octopus, Galacenter became an unwieldy, tradition-bound hierarchy of overwhelming inertia, its guardianship of the vital principles which had brought it into being, eroding into fixed procedures which were little more than ritual. It became possible for certain fringe cultures to enjoy the privileges of Web membership, while still retaining age-old colonial policies which were only thinly disguised as legitimate activities.

But an action must—eventually—have its reaction. And the reaction which shook Galacenter and the entire Web was triggered by a minor emperium which suddenly began to experience an amazing series of "unprovoked" attacks . . .

"Dr. Van Buran, I understand you have processed *Goddard IV*'s data tapes and have also examined the artifact. Were you able to come to any conclusions?"

Several." The doctor, obviously a factual minded man, stared stolidly at the Committee.

After a moment, the chairman coughed. "And what were those conclusions, Doctor?"

"That the artifact did not, as Captain Speckmann implied, cross two hundred kilometers of space instantaneously. During each transfer, there was a measurable time interval between its disappearance from his vicinity and its reappearance elsewhere."

"But a . . . *ahem* . . . rather short interval, I gather?"

"Very short. I should explain that certain sensors aboard *Goddard IV* are capable of detecting time intervals as small as that required for light to travel only twenty kilometers. At three hundred thousand kilometers per second . . ."

"Yes, yes, we understand all that. Please make your point."

Van Buran blinked. "Er . . . yes. Of course. Well, the point is that the artifact switched locations at approximately six times the velocity of light."

The chairman looked skeptical. One of the Committee members was more vocal. "Impossible!" he snorted.

"I thought so, too," the scientist said mildly. "At least, I did until I processed those tapes. It is very difficult, you must understand, for someone of my profession to admit the error of a concept he has always considered sacrosanct."

"Such as the limitation of the velocity of light?"

"Precisely." Suddenly, Van Buran's stolid expression relaxed. He looked tired. "Precisely," he echoed sadly.

"Is there any possibility of error?"

The witness roused. "Absolutely

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none. I have had the ship's instrumentation thoroughly checked. And my own calculations have been verified by three of my colleagues."

"I see." The chairman paused, thoughtfully. "Doctor, what did you learn from the artifact itself?"

"Enough to know it was not created here on Earth. Though the original has been disassembled for study, I have here a rough model which I had prepared for this investigation. You can also, of course, compare the model with Captain Speckmann's holograms. Anyway, you will note that the artifact is an almost featureless sphere just over nineteen inches in diameter. The shell is made from a steel alloy of quite impressive strength . . ."

"Has the material been analyzed?"

"Not yet. It will be when I have finished with the sphere and handed it to the metallurgists."

The chairman nodded. "Please continue."

"There is an opening mechanism which we found quite easy to reproduce . . . that slight depression near your thumb. That's right. Now press."

Van Buran watched as the sphere split apart in the chairman's hands. Then:

"The unit falls into two halves, exactly as you see. The pieces of wood represent the shape, size, and location of each of its internal components. That cylinder is the power source. Strangely enough, it seems fairly conventional—a nuclear-electric conversion unit similar to those we have been using for years. The cube next to it is apparently the device which deluded *Goddard*'s instruments into registering the artifact as a six hundred meter planetoid. The fat, H-shaped thing is almost certainly the drive unit. And *that,* of course, will receive very special attention. Not shown in the model are several smaller components which we have identified as semiconductor devices, and some hollow connecting tubing which are presumably wave guides. There are a few other items which are unfamiliar, but I expect it will be just a matter of time before we fathom their purpose."

"You seem very confident," smiled the chairman.

"With good reason. To start with, the device which projected the energy barrier performed a function not entirely unknown to me. For some time I have been associated with a research program which hopes to produce a similar device: purpose to protect spacecraft against the harmful radiation emitted during a solar storm. It does this by surrounding the craft with an invisible screen which is nevertheless opaque to such radiation . . . exactly in the same manner the artifact projected a screen which was opaque to *Goddard*'s

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probe beams. By a technique of direct comparison, we therefore should be able to identify the subcomponents in that particular unit. Armed with that knowledge, we can then turn our attention to the more unfamiliar items. And so on."

"Interesting. But I still think you are being overly optimistic."

Van Buran hesitated a moment. Then, quite casually, he dropped his bombshell.

"Of course, there is also the circuit diagram," the scientist said.

"The . . . *what?*" The chairman stared. His three colleagues and the several witnesses who were also in the room, began to whisper excitedly. The chairman angrily called for silence.

Van Buran explained. "The diagram is etched on to the inside surface of the spherical shell. Whoever was responsible, knew what he was doing. There are pictorial representations of the various components, together with lines which represent the circuitry . . . no notations, no script of any kind. I would say the diagram goes just as far as communication between alien species will permit, and no farther. But what it does indicate almost certainly ensures our success."

"Oh, Lord," muttered someone.

"Could . . ." The chairman swallowed. "Based on the knowledge you expect to gain from the artifact, do you think it would be possible to build a faster-than-light drive for one of our own ships?"

"Certainly. It is obviously the end the makers of the artifact had in mind." Van Buran's thin lips cracked into the barest vestige of a smile. "Wouldn't you think so?"

The chairman grew slightly red. "I think such speculation should be left for later in this investigation," he said stiffly. "Thank you, Dr. Van Buran, you may step down. Is . . . ah . . . Mr. Evert Galen present in the room, please?"

Beyond Mars, somewhere within the ill-defined belt which contains the asteroids, a mountain-sized planetoid rotated slowly. It resembled dozens of its kind, a little larger than most, but otherwise an irregularly-shaped mass of stony material. Below its crust, however, its pretense to being a purely natural object ceased entirely. Red-lit, thriving with activity which, though alien, was definitely intelligent, a series of corridors and rooms criss-crossed the huge bulk with mathematical regularity.

The captain of the Rulgan star ship, a squat, gray-skinned humanoid named Etran Kun, listened attentively as his chief officer reported the progress of a plan of conquest.

"The sphere is presently located within a city on the eastern edge of the continent. It has already been opened and partly disassembled."

The captain nodded. "Very good. However, are you sure they will

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not find the sensors and transmitter?"

Subcaptain Rak shook his head. "Unlikely, sir. As you know, the sensors are contained within the thickness of the sphere's shell. And to protect against X-ray examination, they are located exactly behind the etched lines of the pictorial diagram. Captain, the plan is proceeding perfectly."

"So far. But you are forgetting what still has to happen before we start congratulating ourselves." Kun held up an eight-fingered hand.

One." The first finger flicked out like a darting snake. "The sphere must get into the proper hands. We hope that has already happened, but how can we be absolutely sure? *Two:* Their scientists are as smart as we think they are, and are able to figure out the workings of our little unit. *Three:* They subsequently build and test their own version without blowing the planet apart. *Four:* Their first star ship—presuming they build one—is dispatched into our sector of jurisdiction, and; *Five:* The whole plan is accomplished before sixteen standard-date, eighty-three twenty."

Rak looked puzzled. "Why the deadline?"

Instead of answering, Kun threw over a message disc. "This will explain," he said briefly.

The subcaptain caught the disc in midair, placed it against the side of his skull. After a moment, his gray skin mottled with anger. "Why, those . . ." he spluttered. *"Vrest* cats!"

The captain said harshly: "It has been coming for a long time, Rak, and you know it. The point is; the Spicans finally got their Verification Amendment through, and it will be law after the legal adjustment period of four standard years." He took a deep breath of the thick, heavily oxygenated air. "That deadline, Subcaptain, is a fact you must learn to live with!"

Rak recovered his composure, but not without a visible effort. Finally, he nodded. "We will make it. We know the sphere has played havoc with the Terrans' archaic notions about relativity, so their top brains cannot help but be interested. As far as your second point is concerned, I think there is little doubt they are smart. After all, what other civilization has jumped from agrarian to interplanetary in less than two centuries? And people with those capabilities are hardly likely to overlook the magnitude of energies which could be unleashed by a malfunctioning *su-cee* unit. In fact, I will be very surprised if they test their first prototype any closer to Terra than that big moon of theirs. Destination-wise . . ."

The subcaptain spread his arms wide. "What is more logical for their first intersteller mission than the closest star to their sun?"

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"I distrust logic," the captain muttered.

Rak apparently did not hear the remark. Instead, his mouth slit writhed into the Rulgan equivalent of a grin. "By the way, I understand our people at Centauri have already laid on a nice little 'incident' for the benefit of our Terran friends."

"Such as?" asked Etran Kun.

"The usual, I imagine. A ship blown up, or perhaps an obsolete manufacturing complex obliterated. Certainly something which will give Galacenter excuse enough to accept our reaction as 'justifiable retaliation'."

"'Thus preventing any further acts of such piracy against member worlds of the Web,'" the captain quoted heavily. "Six times we have sent that ridiculous message, six times Galacenter looked the other

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way while the Imperium swallowed another world."

The captain booted a cleaning robot which happened to be passing within range. The machine screeched, scurried for cover on rattling treads. "Fools!" Kun said explosively.

Rak watched nervously. "Since they have already accepted the story six times . . ."

"Oh, they will accept it a seventh; I guarantee it!" Kun walked back and forth like a restless tiger, then whirled and glared at his chief officer. "But what happens when Terra is used up? *What do we do when we need world number eight?"*

"Er . . . I'm sure the Emperor is working on that particular problem," said Rak. He swallowed.

The captain snarled. "Bilge! Whatever we do, Spica's amendment will immediately have a whole army of investigators swarming all over the Imperium. Sure, they will only prove what those fools at Galacenter have known all along . . . but then, the Law will *force* G.C. to act! Web battle fleets will carve us up like we carved up that puny democracy on Traesna Two!"

Captain Etran Kun stumped over to the huge star map which dominated one wall of the star ship's control center. Most of the stars on the map were red, indicating members of the Web. The Rulgan Imperium was a dusting of yellow across one, lower sector. Sol, around which orbited their current target, was surrounded by a pulsating ring of green light. Beyond Sol, uncolored stars in their thousands spread out towards the galactic rim. To the Rulgan mind, they were legitimate prey for the ever-hungry Imperium."

"But . . . *how?"*

Kun ground his fangs savagely.

"Mr. Galen, you are the Director of the World Security Agency?"

"I am."

"Since when has the W.S.A. been involved in this particular matter?"

"Since the moment of intercept. The Space Control Agency notified my office as soon as the event occurred. I have since been in constant touch with my opposite number at the S.C.A."

"Why is your organization interested? Surely, this is more the concern of scientists rather than security specialists."

Galen, a sturdy man with rock-carved features, smiled coldly. "I think it is fairly obvious, Mr. Chairman. Someone, for some reason, has given us . . ."

"Given us?"

"What happened out there was no accident. On the contrary, it was a demonstration carefully contrived for our benefit. The artifact itself was obviously designed for easy disassembly, and—just to help things along—its builders included

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a circuit diagram. Evidently, they want us to go to the stars.

"The question is, of course . . . *why*."

Eyes fiercely intent, Galen hunched forward in his chair. "I believe I may know the answer to that question, gentlemen. Therefore before Van Buran and his friends are permitted even one more look at that thing, I want it handed over to my agency."

"Oh, you do, do you?" The chairman smiled with chilly amusement. "A remarkable request, Mr. Galen. No doubt, you have a good reason for making it, I suppose?"

"Certainly." Galen answered dispassionately. "As soon as the artifact is in our hands, I will order its destruction."

There was a moment's amazed silence. Then from his seat at the rear of the room, the normally imperturbable Dr. Van Buran jumped to his feet. "Like hell you will!" he roared.

"You are Mr. Galen's superior?"

Johann de Roos, Deputy Secretary General of The World Federation of States, nodded his head. "Technically, yes. But in practice, my office handles only the financial appropriations for his department. The actual administration of the W.S.A. we prefer to leave to Mr. Galen and his team of specialists."

"Nevertheless, sir, he stated before this Committee that you could better explain the necessity for destroying the artifact. Mr. de Roos, if your connection with the W.S.A. involves only finance, I fail to see why you are here." The chairman leaned his chin in his hand, stared at the witness quizzically.

The secretary smiled. "Probably because I am a politician and Evert is not. You see, we have both agreed that the motives behind this incident could be political."

The chairman frowned. "Could be?"

"There are countless possibilities, of course, most of which suggest no threat to mankind. But because it could not be proven otherwise, Evert had to assume the worst and act upon that assumption with minimum delay. After all, he *is* responsible for world security."

"Which is why he wants the artifact destroyed?"

"Precisely."

"I see. Then perhaps, Mr. Secretary, it would be a good idea if you explained these 'political' motives referred to."

"It is best done by way of illustration," Secretary de Roos began cautiously. He hesitated a moment, then continued: "Imagine a small country, A, rich in resources, but militarily weak and surrounded by powerful neighbors. Imagine also that A and its various neighbors are all pledged by treaty to guarantee each other's political and territorial integrity . . . *if* requested by the injured party. With one exception,

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all the signatories of the treaty have every intention of honoring this mutual arrangement. Nation B, however, happens to be a dictatorship which needs additional resources to support its massive military establishment. Obviously, the government of B is bound to covet the untapped wealth of its small neighbor. But how to obtain that wealth without having A invoke the treaty?"

The chairman studied the witness thoughtfully. "The age-old way, I suppose, is to somehow make A look the aggressor . . ."

The secretary beamed. "Exactly! A few modern weapons are somehow smuggled to a certain belligerent tribe which lies just across the border in A's territory. Since the traditional enemies of this tribe happen to inhabit a village in B's territory, you can easily see what will happen. A couple of hundred savages come charging across the border, murder some of B's citizens, and then carry off the surviving women and children after setting fire to the village. Nation B, of course, reacts with outraged indignation. And while its army is marching over A's territory, B's diplomats are making loud speeches describing the barbaric slaughter of innocents by terrorists recruited and trained in A. By the time the smoke clears, the conquest is an established fact. And it is far too late to do anything about it."

After smiling benignly at the Committee, de Roos added: "I agree the analogy may not be very precise, gentlemen. But I am sure it illustrates a very unpleasant possibility which can hardly be ignored."

The chairman looked slightly puzzled. "The weapons in your story are analogous to the artifact?"

"Of course."

"But the artifact is not a weapon. Neither are we a belligerent tribe spoiling for a fight with our stellar neighbors . . . are we?"

The ripple of laughter which followed the chairman's obvious sarcasm was coolly ignored by the witness. "Such an incident could easily be provoked, Mr. Chairman," he said blandly. "Or is the correct word: 'fixed'? State B, for instance, could easily murder its own citizens and then plant evidence to suggest the crime was committed by the intruding tribe. In that case, the artifact may simply be the means to get us to the place where the crime is to be committed. Sometime after that—if the analogy holds true—our skies may be full of invading ships."

"Oh, come now!" snorted a member of the Committee disgustedly. "Mr. Secretary, such a magnificent plot on such flimsy evidence! Frankly, sir, I think this is a case of imagination overruling judgment!"

"Not at all," the witness re-

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joined mildly. "If the artifact were presented to us with entirely benevolent motives, then why were its makers so secretive? If, for instance, they want us to join whatever community they have out there, then the direct approach would have been far easier. As it is, there will be no evidence to suggest that our first star ship was created with outside help. Whatever we do or *appear* to do out there, will seem to be entirely our own idea."

"The makers of the artifact may have a physical appearance unbearably repulsive to humans," the chairman suggested. "It would explain their avoidance of a direct confrontation."

"In which case, it would never have been given to us in the first place!" de Roos retorted. "To react against beings only because they are different is stupidly primitive. We are hardly likely to be candidates for any kind of interstellar political system if fears like that are still with us!"

"Why attribute human-style motives to them at all?" the chairman persisted. "Your main argument seems to be based on logic which is probably peculiar to this one planet. The inhabitants of another world could have a completely different pattern of thinking."

De Roos chuckled. "No offense, Mr. Chairman, but your own logic is sadly out of line. Dr. Van Buran will tell you that true logic is a product of reason. It is, if you will, an efficient processing of facts to arrive at the best possible answer. Science is logical, the laws of nature are logical and are the same throughout the universe. In my illustration, for instance, I described how the logical manipulation of a situation will lead to a desired end with the least effort . . . which, I believe, is exactly what the aliens are doing. Whatever their motives, I also believe that their means are based upon what they have been able to learn about us; presumably from our radio and television transmissions. If the artifact is a bait, they would logically have to tailor it to our psychology. Otherwise, what would be the point?"

"Hm-m-m." The chairman drummed his fingers on the table. "Hm-m-m," he repeated. Then, with a wry smile, he looked up. "Have you watched TV lately, Mr. Secretary?"

"When I have the time for it, I suppose. Why?"

"Because, if the aliens are interpreting humanity on the basis of the idiocy usually displayed on commercial television, they must be expecting something quite remarkable from us." The chairman shook his head sadly.

It had been a frustrating opening to the hearing. Much had been said, though not much had been understood. And according to the list of witnesses yet to appear, more of the same was forthcom-

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ing. So, on that not very remarkable spasm of humor, the chairman adjourned the hearing until the next day.

"You are sure the Rulgans are up to something?" the white-furred Spican asked.

The Vegan, astonishingly human externally though his internal arrangements would have been just as astonishing to a Terran anatomist, spread his hands wide. "How can we be sure of anything? All we know is that one of their units was observed heading in the general direction of the Sol system."

The Spican chewed thoughtfully on a piece of *Uhbra* weed. "Terra would be a very definite asset to the Web. However, if Rulga has aspirations in that direction . . ."

The Vegan nodded. "If those gray-skinned schemers get one of their 'corrective' mandates out of this, Terra will wind up no good even to itself. And if that happens, I hardly think my people will accept the situation passively."

"Oh?" The Spican looked at his friend shrewdly. "What do you suggest Vega would do about it? Secede from the Web, perhaps?"

The Vegan snorted. "Of course not! But the Terrans are so much like us, we cannot help but have a strong, emotional involvement in this affair. We must; we *will* insist on adequate protection for their planet."

Suddenly, his voice softened. "Rorra, I fully appreciate your efforts to stop this sort of abuse. In fact, after your amendment becomes law . . ."

"Which will not happen until the next Grand Assembly, four standard years from now." The Spican's huge eyes became darkly thoughtful. "The deadline might crowd the Rulgans a little. But I doubt it will stop them." The large, flexible mouth curved into a smile. "Of course, knowing something of Vegan psychology, I rather suspect your government has already done more than just protest."

"Naturally. We have had an agent on Terra for nearly a year."

"I thought as much." The old legislator selected another piece of the aromatic weed from his pouch. "Aside from the doubtful legality of what you are doing, I understand the Rulgans began to move only weeks ago. Are you Vegans clairvoyant, perhaps?"

"Clairvoyant?" Ghenne Va-Skronne shook his head emphatically. "I am quite aware of Spica's activity in that field, Rorra, but such talents are not for us. After all, even the best psi information is rarely more than ninety percent accurate. In this case, we simply applied old-fashioned logic."

"Ah!" The Spican wagged a good-humored finger at the other. "Still substantiated, no doubt, by the best psi-specialists on your planet. Nevertheless, explain this logic of yours."

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"It was not very difficult," smiled the Vegan. "As you know, the economy of Rulga is in sad shape. Though their own resources are meager, they have chosen to build a huge space navy which absorbs more than half of their available productivity. The major slice of what is left, is used to support the so-called 'nobility'. The rest—or what there is of it—goes to the half-starved millions who make up the vast bulk of the population."

"A most unsatisfactory situation," Rorra murmured.

"Exactly. The people are seething with discontent, and the Emperor knows he is sitting on the lid of a smoldering powder keg. Somehow, he has to find the means to keep the people docile. But to maintain his position, he must also guarantee the wealth of the nobility and the strength of his navy."

"So he embarked on conquest," said the Spican, nodding. "A not unusual course for that kind of society."

"And very unpleasant for the victims. It was unfortunate that Rulga's off-world adventuring proved so successful. The masses have been kept in a constant state of patriotic fervor, the Emperor and his nobility are secure, and the navy has been kept busy. The Web's Second Principle was an obstacle, of course. But you and I know how the Emperor dealt with *that* particular problem."

"Which brings us to Terra."

"The nearest and most obvious choice for the next conquest. Six worlds have been bled white, yet Rulga's economy is already showing the characteristic sag which follows each of its conquest-fed booms. Since Terra is rich, accessible . . ."

Va-Skronne angrily slammed a fist into his open palm. "Can you imagine those pirates *not* taking advantage of so rich a prize?"

"Frankly, no," the Spican admitted. "But at the same time, I am not sure I approve of Vega's action in placing an agent on Terra. Legally, it constitutes interference."

The Vegan snorted. "A minor breach to prevent a major crime."

"Perhaps. But I doubt the Grand Court will approve."

Astonished, Va-Skronne stared at the Spican. "Rorra?"

The other chose to ignore the implied question. Instead, he regarded his companion thoughtfully. "I am a little vague as to what your agent is supposed to accomplish. After all, it is Rulga's intentions which concern us at the moment. But then again, I suppose no Vegan could ever pass muster as a native of Rulga." Rorra smiled at the thought. "By the way, have you heard from him?"

The Vegan shook his head. "Not yet. You see, if there is a Rulgan unit in the neighborhood, they will detect his transmission as soon as he makes it. After that, of course,

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they are bound to block any further ultra-wave signals originating from the planet. So he may not transmit at all." Va-Skronne hesitated, then added: "Unless events force his hand."

"Seems a somewhat purposeless mission," Rorra commented. "So far, you have only told me what he cannot do."

"If anything can be done, only he can decide it!" retorted Va-Skronne defensively. "All I can tell you, is that we pulled off a rather audacious substitution to get him in there. So it is just possible he may be in a position to influence events. If Rulga has some plan which will show Terra's sub-light culture as dangerous to the Web, that plan must be diabolically ingenious. And if its preliminary phases are supposed to occur on Terra itself, Den-Hahlov will learn about it and let us know." The Vegan took a deep breath. "*That* is our hope."

"And all you can do is wait?" queried the Spican.

Va-Skronne shrugged. "What else?"

"I suppose there is really not much else you can do." Rorra rose, flowed smoothly across the room. As the door dilated, he turned.

Va-Skronne watched anxiously.

"Then I, too, will wait," the Spican said.

The chairman looked at the message in his hand, then at the witness. "Jenson Langley?" he asked.

"That is right."

The chairman held up the message. "What is your connection with the Interplanetary Development Corporation, Mr. Langley?"

"I am the director in charge of public relations."

"A . . . salesman?" There was no mistaking the distaste in the chairman's voice.

"In a sense," the witness admitted calmly. "But not in the way you are thinking. Because our projects absorb huge sums of public money, someone has to justify that expense to the taxpayer. That is my major function."

"In other words, you sweeten a bitter pill," a Committee member commented dryly.

Langley smiled. "Precisely."

The chairman coughed. "As you know, Mr. Langley, this message is a request that you be permitted to testify before this committee. Though no reason is given for the request, we have presumed the I.D.C. had pertinent motives in making it; hence your presence here. However, because of the limited time at our disposal, we prefer that you be as brief as possible."

"Of course." Langley produced a gray folder which he laid on the Committee's table. "This document fully explains our position, Mr. Chairman. Briefly, the I.D.C. will oppose any attempt to suppress the knowledge contained in that artifact; which, in effect, would

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deny man access to the stars. There are uninhabited worlds out there—perhaps thousands of them—on which human beings could live and breathe as freely as they do here on Earth."

A slight, dark man with the Latin habit of gesticulation, Langley spread his hands wide and added dramatically: "Without pressure domes, gentlemen!"

The chairman was not very impressed. "Uninhabited, you say?"

"Why not? After all, man is a relative newcomer even on his own planet. Before he came, Earth had existed for billions of years. And for much of that time it was rich, verdant, and completely unspoiled."

"But even if such worlds exist, they may already have been colonized from elsewhere," another Committee member pointed out. "The simple fact of the artifact's existence proves that at least one race has the capability."

The witness shook his head. "Life has too many possible variations. A paradise for humankind is probably a poisonous hell for most of the other beings in the galaxy. And what suits them, of course, would be equally obnoxious to us."

"Such colonization—presuming it is possible—would be a fantastically expensive proposition," commented the chairman. "How would you justify that expense, Mr. Langley?"

"It would cost a few billions," Langley agreed affably. "Nevertheless, not as much as we are spending in our own planetary system."

The chairman stared incredulously. "Over interstellar distances?"

"Mr. Chairman, do you know how long it takes for one of our ships to get to Titan, our farthest colony? Nearly two years! Yet that little model—which I'm damn sure is *only* a model—could make it to the next star in less than one year!" Langley wagged a lecturing finger at the four men of the Investigation Committee. "The cost of the Titan pressure dome alone could finance a dozen trips into the galaxy. Even the cost of the first Luna base . . ."

"I hope you have not *quite* as much to say as the last witness," the chairman remarked wearily.

Dr. Van Buran, recalled at his own request, smiled thinly. "I have fresh evidence," he said.

"Ah!" The chairman roused himself, leaned forward in a gesture of interest. "I hope it will liven up the proceedings, Doctor."

"It will." The scientist laid a piece of curved metal and a magnifying glass on the table. "This is part of the artifact's shell," he explained. "Please examine it."

The chairman picked up the two articles. "I see some faint lines," he said after a moment. "Silvery." He looked up. "Is this the circuit diagram you were telling us about?"

"No, sir. Those lines were *under*

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the circuit diagram; duplicating it exactly. Now here is a photomicrograph of one of those lines. You will note it is actually a channel containing a dozen or so extremely fine conductors. It is part of a very complex circuit which our initial X-ray examination failed to reveal because it was masked by the surface etching."

As the piece of metal and the glass were passed among the other members of the Committee, Van Buran continued:

"The circuit was discovered by one of my assistants when he examined the shell with an infra-red scanner. He found an area which was slightly warmer than the surrounding metal. So he ground the surface away at that point and found a tiny energy cell—and the beginnings of the circuit it powered."

"Well, well." The chairman retrieved the sample, studied the fine circuit with fascination. "What was its purpose, do you think?"

"Undoubtedly, it was a beacon," Van Buran replied without hesitation. "A device to pinpoint the exact location of the sphere at any given moment. It probably transmitted other little items of information as well; perhaps even monitored our conversation as we worked on the sphere. Of course, the thing is not transmitting now. So it will take a good deal of research to learn the precise nature of what it was doing."

"I don't like it!" snapped one of the Committee. "More than ever, the damn artifact smells like a Trojan horse!"

"It certainly could be something of the kind," the chairman agreed doubtfully. "Then again . . ." He cocked an inquiring eyebrow at the witness. "Doctor, would such a device necessarily imply hostile intentions?"

"It could imply a lot of things; benign or otherwise." The scientist's mouth widened into its humorless smile. "But since you have already cautioned me about any kind of speculation, I would rather confine myself to the facts."

"Ah . . . yes. Of course." The chairman rapidly shuffled through his notes, found the page he wanted, and then said:

"Yesterday, you told us you could probably learn enough from the artifact to be able to duplicate its faster-than-light propulsive system. Do you have anything to add to that statement?"

"I have." Obviously enjoying himself in spite of his naturally grim expression, Van Buran went on: "At the time I was before this Committee, my team at the lab were in the process of discovering some rather interesting inefficiencies in the artifact. Power loss, for instance, was quite excessive. Also, the wave-guide system was . . .'

"Spare us the technicalities, please. In layman's language, what is your point?"

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"Only that what I said yesterday does not go far enough. Not only can we duplicate the drive, it now seems we can improve it!"

There was a moment's heavy silence. Then the chairman scowled. "Indeed, sir," he said with noticeable exasperation, "you are full of surprises!"

Two Terran years and eight months later:

Still maintaining its orbit in the asteroid belt, the Rulgan star ship had become a seemingly permanent addition to the Solar System. Like intelligent beings anywhere in the cosmos, the average Rulgan could tolerate a certain amount of monotony provided it pointed towards a definite and profitable end. Otherwise, it stopped being tolerable and took on the aspects of slow psychological torture. Thus it was aboard their tiny world as the slow months dragged into interminable years.

Of course, the conquest of Terra was very definitely a profitable end. But where was the progress? Or even news of it? Signals from the artifact had abruptly ceased within days after the Terrans had taken it down to their planet. Officially, the reason given was malfunction. But even the least among the eight hundred crewmen knew that the enemy could have discovered the carefully concealed spy circuits. In any event, there was now no way of knowing what was happening. And human broadcasts and activities gave not a single clew. Space traffic maintained its normal schedule between the various manned bases in the System, two expeditions were launched towards Uranus and Neptune, and assembly began on a huge new space station at the neutral point between Terra and its big satellite.

If there was any indication at all, it was strictly negative. The Rulgan planners had anticipated that the Terrans would activate a prototype *su-cee* drive within 1.5 years of receiving the artifact. Yet no such event was detected. Though the star ship's scanners probed ceaselessly for the characteristic burst of energies which always occur at drive activation, their coupled alarms remained silent. Either the Terrans had been vastly overrated by the planners, or they were smarter than had been estimated . . . *much* smarter. The latter possibility gave Etran Kun and his officers a severe case of the jitters.

Symptomatic of the unhealthy atmosphere which had developed aboard the Rulgan ship, was its captain's violent reaction to a minor mutiny over food rationing. Two crewmen were executed outright, another tortured to death, and the others involved were exiled to the dank storage decks at the south pole of the planetoid. Thereafter, a reign of terror typical of the kind normally imposed on conquered races, was imposed by Kun throughout the ship. It was an

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ironic reversal of roles for many of the would-be conquerors, but somehow they endured . . . if only for the sake of a fading dream known as Terra.

Relief—if such it was—finally came when the Terrans themselves volunteered the information the Rulgans had waited so long and painfully to receive. It started with an all-frequency signal originating from Terra: *Cease all transmissions. Priority broadcast follows.*

Etran Kun and his chief officer were immediately called to the communications room at the heart of the planetoid. As they arrived, the video screen bore the image of an elderly human seated before the stylized world map which was the only symbol the World Federation had inherited from the old United Nations.

"He is their secretary general," an aid whispered hurriedly. "He has just described the interception of our sphere by one of their ships."

As the human spoke, computers issued a direct translation in the hissing language of Rulga:

"We were faced with a quandary," the secretary general continued. "Was the gift of the artifact an act of benevolence? Or were more sinister motives involved? Did it beckon towards an expanding future among the stars? Or was it an invitation to a rendezvous which might be used as an excuse for conquest? Some of us felt we should evade the issue by destroying the artifact. Others pointed out that the artifact's destruction might be misconstrued by those who had sent it . . . with, perhaps, equally unfortunate results.

"Whatever our course, it was apparent that the future of the human race was in the balance. One fact, however, was in our favor. Soon after our scientists began disassembling the artifact, they discovered a hidden spy circuit. That circuit was immediately deactivated, thus severing the only link between the aliens and their instrument. In addition, knowledge of the artifact's existence was withheld from all news services, and everyone involved was sworn to absolute secrecy.

"Then—and only then—did we begin to act. With knowledge gained from the artifact, work was commenced on a full-scale star drive . . . a unit which would include several improvements over the original, I might add. Whether or not we would actually use the drive, however, was a decision we would delay until the last possible moment.

"One more fact did come to light after the theoreticians got busy. It was proven that at the instant of drive activation, a high energy signal would be generated, detectable over hundreds of millions of miles. Question: Was *that* the signal the aliens would be waiting for to commence their own operations . . .

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hostile or otherwise? We had no way of knowing. But we had to assume an alien ship was within range of such a signal . . . perhaps concealed amid the thousands of pieces of cosmic material which orbit the sun between Mars and Jupiter."

The secretary smiled. The Rulgans did not know what a human smile signified, so they were not forewarned by that look of obvious enjoyment. In fact, Etran Kun and his officers were concerned that their plan was failing because the Terrans had chosen discretion over valor, and had decided *not* to activate. The would-be conquerors sadly lacked knowledge of the devious ways of man.

"The ship was finished five months ago," the Terran continued, "and we had to make that final decision. The two problems we still had to overcome were these"—he held up a finger—"*One:* How could we conceal the telltale signal of drive activation and *Two:* Was there something nasty awaiting our ship in the Alpha-Centauri system?"

Subcaptain Rak muttered angrily as the prospects of easy conquest faded a little more. The captain merely stood like a gray statue. But his orange-colored eyes were smoldering. "Contact Centauri Base," Kun said tightly. "I want to know if . . ."

"It was very fortunate," the human was saying smoothly, "that the answers to those problems were really quite simple: a matter of strategy rather than engineering. Suffice to say that *Star One*, under the able command of Captain Isaac Speckmann, activated its drive February 3, 2019 A.D. Yesterday, May 24th, I received the following communication from the Titan Research Station. I quote: '*Star One* arrived 06.30 G.M.T. All is well. Reported contact with friendly aliens within minutes of first drive deactivation. Further report . . ."

A beam of white-hot light abruptly split the air of the communications room, and voice and image exploded into shards of flying rubble. Staring at the smoking ruins of what had once been a bank of communications equipment, Captain Etran Kun carefully re-holstered his still hot weapon.

Then he opened his huge jaws and cursed horribly.

"It was laughably obvious, really," the delegate from Terra was explaining, "though it took months of high-powered brain work before anyone thought of it. All we had to do was place the mass of a planet between the ship and the aliens we suspected were in the asteroid belt. The drive could then be activated without the least fear of detection. So *Star One* made the journey to Titan under conventional drive, just like a ship on a regular supply mission. When everything was ready, her captain then took her down to close orbit below Saturn's rings, waited until they were in the

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middle of the dark side and . . ."

His Vegan companion gestured for silence. *"Sh-hh,"* he whispered. "Rorra is about to make the official announcement."

They watched as the old Spican mounted the dais in the center of the Grand Assembly. From where the Earthman was standing, the scene resembled a wild surrealistic painting. Thousands of beings of every conceivable shape, size, and color, were ranged in their assigned places on the rising sides of the huge arena. They were sitting, standing, lying, and even floating within the transparent bubbles which contained their peculiar atmospheres. The oxygen-nitrogen mixture which filled the rest of the great space was, he had been told, a convenience accorded him as the first official representative from Terra. Tomorrow, a chlorine-breathing being from Whevhann Nine would receive the courtesy. Then, of course, the Terran would be required to retire to his own bubble. But Bernhardt Latendorf was well satisfied with the arrangement. *After all,* he thought somewhat smugly, *it'll be infinitely better than slaving for the Rulgan Imperium.*

The Assembly became silent as Rorra slowly rotated the dais and bowed to the six jeweled markers which symbolized the Web's universality: North, South, East, West, Zenith and Nadir. Finally he faced the high platform where the Terran and his sponsor stood, bowed deeply to this representative of a race whose first star ship had penetrated into the Web's heartland after an unheard-of jump of nearly two hundred parsecs.

"On behalf of all assembled here," said Rorra in strangely accented but perfectly understandable Earth-English, "I welcome Terra into the fellowship of the Galactic Web. May its association with our mighty commonwealth be permanent and fruitful, and may our governing councils hereafter benefit from Terra's wisdom and Terra's experience. Thus does the Web grow. Thus does the Web become strong."

The delegates answered with a low roar. Latendorf gazed apprehensively at the serried ranks of occupied bubbles. Objection, he wondered? He whispered his fears to the Vegan. Va-Skronne smiled and shook his head. "It was the ancient word: *'Dimhon',"* he whispered back. "In your language, I suppose you would say: 'So will it occur.' "

The Earthman blinked. "How about that?" he breathed. "The Galactic *'amen'!"*

Rorra continued. "In accordance with Terra's own custom of exchanging ambassadors, I further declare that Va-Skronne of Vega Nine has accepted the responsibility of being the Web's representative to the Terran government."

This time, Latendorf was sure the answering murmur signified ap-

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proval. It was reflected in the pleased expression on Va-Skronne's face—a face amazingly human in appearance; equally so in its expression of emotions.

Rorra abruptly switched to Galactic, a smoothly syllabled artificial language which had been old when Latin was spoken in ancient Rome. But Latendorf continued to hear the old Spican's words in English; a computer-produced translation via the receiver clipped over his ear.

"My friends, I think you will also welcome my next announcement, especially on this occasion of Terra's admission to the Web." Though Rorra did not smile, there was undoubted satisfaction in his manner. "I would first remind you of Spica amendment eight thousand and sixty-three. Specifically, it forbids any form of military reaction against a *source* of aggression, until the legitimacy of the original complaint has been verified by an authorized agency of the Web. I now wish to proclaim that the required adjustment period of four standard years has passed since this Assembly approved the amendment. Enforcement networks have been notified and have duly acknowledged. Objections submitted during the adjustment period were considered and rejected by the Grand Council. Amendment S8063 is, therefore, law."

The noisy approval which greeted the announcement, surprised even old-hand Va-Skronne. He shook his head wonderingly. "Bernhardt, your people have stimulated this Assembly in a way which has not been seen for a thousand years . . . I really believe Galacenter is going to function again!"

Rorra waited quietly until the demonstration subsided, his fierce, tigerish features impassive. "Of course, you are all aware of the peculiar circumstances behind Terra's emergence into interstellar space; of the part played in that event by a certain Imperium still laboring with prehistoric dreams of expansion."

The Spican's contemptuous reference to Rulga produced a ripple of derisive laughter. A few tiers up from the floor, a row of gray-skinned delegates sat stolidly through the ridicule, though their eyes glittered with suppressed hate.

"In light of what has happened," Rorra continued, "and in light of the fact that it was the experiences of its own history which enabled Terra to escape the fate planned for it, I therefore suggest we have an ideal source from which to draw the agency that will enforce Spica amendment eight thousand . . ."

This time, the assembly's overwhelming roar of approval was echoed by the billions of galactic citizens who were watching via ultra-wave network.

On Vega IX, in a small but luxurious residence which nestled in a high mountain valley, another Earthman also voiced happy ap-

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proval at seeing his race elevated into the highest galactic councils.

He turned away from the wall-sized viewscreen. "In some ways, I suppose you two are equally pleased as I am," he said, gesturing at the colorful scene. "That fellow you put in my place must be quite amazing."

The smaller of his two Vegan "jailors" nodded. "He is. But strangely enough, he had no need for any of his peculiar talents. He simply acted as you would have done. Your people did the rest."

The Terran stared. "You mean I've been here all this time for nothing? Dammit, of all the . . ."

"Our official representative to your planet will benefit considerably from the agent's experience there," the Vegan said soothingly. "After all, look at it from our point of view. How were we to know the Rulgans were about to meet their masters in the league of sneaky tricks?"

The Terran laughed. "That I will take as a compliment. Seriously though, don't you think my people will be a little annoyed when I tell them they have had a Vegan secret agent within their midst?"

"But you will not tell them."

"No?" The Terran frowned. "You seem very sure of that."

"Of course. In a few months you will wake up on your own planet, in your own bed, with not even a dream to remind you of your stay here."

The Terran stared. "Psychological conditioning?"

The Vegan nodded.

"Well, I know you people are pretty good at that sort of thing" —the Terran shrugged helplessly— "but how in blazes am I going to explain a blank of five years?"

"You will not have to. Memories which would have been yours had you stayed on Terra, will simply be superimposed on your mind. And they will be very interesting memories, I can assure you."

"No doubt," the Terran said dryly. "When do you propose to submit me to this brainwashing?"

The taller Vegan looked pained. "Really, we are not barbarians," he told the Terran stiffly. "It is a simple, painless process which can be accomplished while you are journeying towards your planet. In fact, since the conditioning takes only a matter of days, I see no reason why you should spend the greater part of the trip in a 'suspended' state, so to speak. If you wish, the treatment can be delayed until the last possible moment."

The Terran grimaced. "I wish." Then: "When do I leave?"

"Immediately, if you like."

Home. The thought was sweet agony.

Slowly, the Terran got to his feet. "All right," he said huskily, "show me the way."

A prisoner released, Dr. Van Buran followed the two Vegans out through the door. ■

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The ancient myth has it that
Diogenes looked for an honest man with a lantern.
This story says he should have looked
for an honest man with a ZOZZL!

JACKSON BURROWS

Illustrated by Leo Summers

Hammer came rocketing down to Fomalhaut IV, loaded for zozzl, and never mind the three spooks that had matched him warp for warp, drawing closer and closer, all the way from Hermes.

He left the spacecraft in a little clearing, pausing only to punch the camouflage button before plunging into the surrounding forest.

The spooks would detect him soon enough, camouflage or no camouflage—it hadn't deterred them in space—but by that time he should have a zozzl. He had better have.

"Here, zozzl, zozzl, zozzl," he chanted. "Come out, come out, wherever you are."

He was talking to himself, of course, because a zozzl cannot hear, and, even if it could, under no circumstances would it ever come out voluntarily.

But Hammer had been in space for two weeks, bereft, and on top of that he had had to dodge the spooks from the start and condemn himself for not knowing they would have seen through his lift-off ruse on Hermes. He was tired and red-eyed, beard-stubbled and out of sorts; if he wanted to talk to himself, that was his business.

There! He felt the first probe—really no more than a blind questioning at the edge of awareness—a gossamer touch across the mind.

He willed himself to think only of the upcoming Denebian lottery. He concentrated on numbers, trying to calculate the exact odds against his ticket winning.

The stratagem didn't work. It never did. Whenever a man was out to catch a zozzl, the zozzl always divined the man's intent, no matter how he tried to mask the thought.

The probe firmed, and Hammer felt it filtering on down through his frantic calculations, little mice scampering across the tightropes of

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his mind. Then came the moment when his intent was laid bare. The probe recoiled as from obscenity —and struck back with nightmare.

Hammer was drowning; he swirled down and down into the green depths of the sea, eyes rolling, lungs pumping in the first and then the second spasmed inhalation of water. And then not pumping at all.

The pain left his chest, and it was pleasant, bowling along with the darkening current, end over end over end . . .

The strength of the mind-snap took Hammer by surprise. For an instant he believed it. Then he forced himself to start swimming and keep swimming, knowing that he was really crawling across the forest floor and inhaling air, not water, but knowing, too, that the zozzl was in command and could force him to make his system reject the air and treat it as water, and so kill him.

After forever the forest whipped back into reality; Hammer had crawled out of zozzl range.

He leaned against a tree, dripping perspiration, examining his skinned and bleeding hands. A serpentine trail showed how far he had scrabbled across the earth—too far, for a first-contact mind-snap.

Hammer's fatigue-gray features grew grayer. Any zozzl that could take the measure of a stranger so rapidly, and could project so strong a snap at the very perimeter of its range, was quite a zozzl indeed. It was either a very brilliant zozzl, or a very powerful one, or—most probably—both.

"It doesn't matter," growled Hammer, "because it's not the zozzl for me."

Or was it? Wouldn't just such a magnificent zozzl be much more satisfactory than the normal run?

"Sure it would," agreed Hammer, "but I don't need perfection to get myself good and zozzled. The normal run will do just fine."

But even as he pushed on in quest of a less powerful specimen, his glance strayed back, seeking the entrance to the first zozzl's lair. The dare was beyond resistance—and the lurking spooks gave Hammer no time for choosiness.

From where he stood he couldn't spot the entrance to the lair, but that was to be expected. Zozzl burrows weren't much larger than those of Terran gophers, and in his drive for preservation a zozzl always dug his entrance under a concealing overhang, of rock or bush or perhaps fallen tree.

"I must be nuts," said Hammer, rejecting the dictates of sanity, knowing that this was the zozzl he was going after.

What a superb creature it must be!

To catch the zozzl below, began the ironic bit of spaceways doggerel, *first find the burrow above.*

"Yeah," said Hammer. "Just like that. Easy as flipping into orbit."

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Well, he couldn't see the entrance. And he couldn't very well go back into range and hunt for it, not without prolonged exposure to mind-snaps that would sap too much of the strength he needed for the invasion of the lair.

The only thing he could do was compute the location of the entrance.

He gritted his teeth and inched toward the spot where the drowning mind-snap had engulfed him.

Suddenly the probe came again —but soft and feathery, as gentle as it had been at initial contact.

Hammer abruptly stepped back out of range.

So now the zozzl, in its blind instinctive way, knew that combat had been joined. The next two or three probes would probably be gentle too, with the probe sifting through Hammer's mind, mapping the neural patterns of his most secret fears, storing them away for use should Hammer invade the lair.

A zozzl was essentially mindless, but its probe had an affinity for fear impulses and was able to excite them. The victim's own mind did the rest, building nightmare on nightmare as it responded to the stimulus.

Hammer took a stick and stuck it in the ground, marking the place where the probe had just reached him. Here began the outer limits of the zozzl's range.

He circled crookedly, dodging in and out of range, using the zozzl's probe as a guide. Gradually the contacts grew stronger, and definitely unpleasant. The zozzl was getting his measure.

There was the instant when Hammer was confined in a dark, dank place, with squeaky chittering little things nibbling at his toes, followed by the moment when he was so overcome with nausea that he disgorged his whole organic system and stood stupidly staring at it as it dangled from his chin, turned inside out. Or so it seemed.

But these were essentially just bits of nastiness; even the drowning sequence, fatal though it could have been, had been just nastiness. A zozzl hadn't really gotten started until it was familiar enough with the hunter to go to work on his personality.

Hammer shivered. No wonder the planet wasn't colonized. Before anyone could live here all the zozzls would have to be killed or captured—and there weren't enough conditioned persons in the galaxy to take on the job, even should they want to.

Hammer knew he scaled pragmatic on the conditioning tests. It did not seem to him that he was pragmatic; it only seemed that others were confused by emotion, and less apt to relate cause and effect properly.

And pragmatism of itself was not enough. The pragmatic had to be a self-honest pragmatic . . .

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But this was no time to be thinking of that. This was time for Hammer to keep his wits about him, and remember that, although only self-honest conditioned pragmatics dare get zozzled, even they were taking a chance on getting so mind-snapped that they would never be able to achieve clear again.

Hammer plodded on, defining the limits of the zozzl's range, bobbing and weaving in and out of the probe. When he had finished he stood back, awestruck.

Through the forest tangle he had paced off a crude circle encompassing fully an acre. Hammer's practiced eye told him it could be no less. And the greatest range ever reported in the *Zozzlers' and Handlers' Journal* had been a shade three-quarters of an acre.

His excitement mounted. He really had tied into a beauty. He stood to catch the most powerful zozzl yet reported.

He pushed aside bushes and clambered up trees, trying to visualize where a couple of snapped chalk lines would meet and define dead center of the circle.

He still couldn't perceive the entrance to the burrow, but he knew it had to be where the imaginary chalk lines crossed.

Zozzls didn't have rambling warrens; they just went straight down, one to a hole. This zozzl was straight down from the intersection of the chalk lines—waiting to hurl madness at Hammer.

The entrance was more than likely concealed under that big bush, the one with the long black thorns and the clusters of magenta seed pods. It didn't matter; Hammer knew approximately where it was. He would find it when he came back.

"Ah, you zozzl, zozzl, zozzl," he gloated, hurrying back to his spacecraft. "You beautiful, giant, most ferocious zozzl. Now I've got you!"

He wished he were as confident as he sounded. And as he activated the air lock he caught a tumbling flicker of light, high up across the sky. The spooks were in orbit, scanning for him.

Inside the ship Hammer rummaged in his locker and dragged out his personality projector. It looked like a thick plastic helmet, oversized and battered, and painted a bright optimistic Kelly green.

Hammer had picked it up secondhand at a space chandler's in Betelgeuse and hadn't used it for a while. He blew off the dust, had one frightening moment when he thought a damaged circuit had failed to repair itself, and put it on.

He sank down into his webbing and thought about the zozzl as the sensitized safety-straps wrapped themselves around him.

"Zozzls," he grumbled. "Why couldn't they have been born with something common and everyday and easy, like claws or fangs or tentacles?"

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But then zozzls would not be zozzls.

Hammer activated the helmet. The projection was instantaneous. It seemed to Hammer that he got up and hurried back into the forest, thinking only of the zozzl and not of the second threat from the spooks.

But he didn't get up at all. Just his personality did.

The rest of him—his body—remained behind, snugly belted into the webbing, at rest, dormant.

His body was neither living nor dead, but in suspension, a body without a personality. It would remain so until Hammer's personality came back to reclaim it.

Whether the personality would be sane, or even still alive, remained to be seen. If the personality failed to come back, the body atrophied and died, and that was that.

Zozzls dealt with their enemies —that is, everybody—on the personality level, and so to take a zozzl a man had to strip himself of everything but personality. To do otherwise would be to accept a handicap, for full attention must be on personality.

And, of course, personalities have no material dimension. They can slip into a relatively small zozzl hole as easily as into an elevator shaft, and, being weightless, they will not fall.

For the sake of sanity and convenience, Hammer projected his personality in the form of a man.

"I'd make it a woman," he grinned, "but then the zozzl would be sure to get me—he'd sneak up on me while I was finding out what a woman is all about."

The *Zozzlers' and Handlers' Journal* had recommended a new mind-clear since Hammer had last gone zozzling.

"If a man fills his thoughts with love alone, then the zozzl cannot find the wherewithal to project terror."

So writing, an omniscient *Journal* researcher—no doubt safe, sound, and never zozzled—recommended committing to memory something he called "A Sonnet From The Portuguese."

Hammer had routinely put it on the memory tape one night before sleeping, and now decided he might as well make use of it. It couldn't let him down any worse than had the Denebian lottery idea.

He plunged into zozzl range, reciting as he came.

" 'How do I love thee? Let me count the ways.
I love thee to the depth and breadth and height
My soul can reach, when feeling out of sight . . .' "

He thought Claire called out to him, but when he turned he saw only the empty sweep of sand and sky.

Where could she have gone? Didn't she know how dangerous

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this Saharan world could be, for all the wild beauty of its shifting sands and flaming sunsets?

He topped another dune—and there she was, dear Claire, lying on her side, her back to him, the sparkling blue and white of her frock a cheery beacon of color against the endless flat gold of the desert.

He hurried down the slope. "Claire! I was afraid you'd gotten lost—"

And so she had. For when he turned her over he saw that the sun and sand had baked her dry. She was brown and shriveled and all pulled in on herself; she was a mummy.

Two hours ago they had loved, and love and life had been eternal.

He lifted her gently—so light!—and started back toward the honeymoon compound. The tears stung like blowing sand.

The zozzl forest snapped back into reality: when Hammer had turned to carry Claire away, he had turned away from the zozzl's lair and stepped out of range.

Now that had been a mind-snap! He marveled at the zozzl's technique. He knew a Claire, all right, knew her well, but he had never been married to her. She probably wouldn't have him—and his prolonged absences in space trying to keep his rickety one-ship freight line in business.

How real everything had seemed. He still felt bereavement and absolute loss.

So the Portuguese, whoever or whatever they were, and the Sonnets, whoever or whatever they were, couldn't establish mind-clear any more firmly than could calculations of odds on the Denebian lottery.

Hammer lurched back toward the thorn bush with the magenta seed pods. The entrance had to be under the bush; it was at the bush that the mind-snap had been most persuasive and commanding—the place where he had turned Claire over, seen that she was a mummy, and stumbled away with her . . . away from the entrance and the zozzl.

Now he made a run for the bush, slipped through branches—and shot down into black emptiness.

He was back on Janq, in the mop-up after the final battle, and he was looking for Martin.

He did not want to look for Martin, because he knew what the Janq did to their prisoners, but Martin had saved his life, early in the war, and he must repay the debt as best he could.

It was not even a war that mounted to anything—three minor star systems in conflict—a scant ten billion humans squared off against eight billion or so Janq. Anyone farther away than a dozen parsecs never noticed.

But on the frozen world of Janq,

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captured humans still became what some ghoulish wag had long ago dubbed "cold cuts."

So Hammer, pushing through the pitted ice caves to a land with skies as gray and heavy as concrete, came at last to the—house? —where the captured Janq records said he would find Martin.

The structure was half material, half concept—not material based on concept, but material interwoven with concept, so that each became complementary building blocks. Hammer did not understand how it was done any more than he understood the Janq, but he did know how to get inside. There had been enough of that during the war, getting inside.

From outside the structure looked for all the world like a giant deck of cards stacked up on edge, shivering off into blurriness with concept.

But inside the structure was almost limitless. For the cardlike material simply provided substance; the concept provided dimension.

Hammer stepped into space that his senses told him was not there. For a moment it seemed that he was trying to squeeze between two of the giant cards, into slotted space no larger than inches.

Then he stood in a room, a great empty vault as cold and lifeless and gray as farthest space—and eerie as the mind of a Janq.

The Janq used no furniture, no carpets, no drapes . . . only wall decorations. Hammer thought about the wall decorations and nausea swept him.

But there were no decorations on the walls of this chamber. He must push on.

He didn't want to. He stood there in this place of the Janq and he fought to make himself go on. Martin. He had to do it for Martin.

The cold crept through even his insulated suit. He found the concept leading to the next room, and he stepped in quickly, hands clenched, eyes slitted against what they might see.

But this room was as barren as the first, as sere as death.

How many rooms must he dare? How many before he found . . . what he must find?

He pushed on. Each room became harder to enter.

Finally he stepped into the right one. It was the largest of all—and decorations covered the walls.

In the dim days of his schooling Hammer had once peered through a microscope and beheld the purple-stained cross section of a worm. It had been strangely beautiful.

The wall decorations looked like that cross section, although, of course, these were much larger and stained in a variety of colors.

And they did not come from a worm. They were wafer-thin, scarcely a millimeter thick, and they had once been a man named Martin.

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He had been quick frozen, and then sliced up by laser like ham on a butcher's block. Martin had been over six feet tall, and so he had made thousands of wafers.

The sun was small and yellow and distant, and promising of nothing except more cold, but Martin's slices had been shot through with just the right dyes to catch the light and turn them into coruscating beauty, rich and variegated.

The impression was not unlike that one receives from the very best stained-glass windows—if one overlooks the warmth of the windows

Windows the Janq may have considered these disks. But they were not glass. They were cold cuts.

And now Hammer had to put Martin back together again, and take him away, and give him decent burial.

The Janq . . . they never robbed, raped, pillaged, tortured. They just took prisoners—took them, quick-froze them, stained them, and sliced them up for wall decorations. It wasn't even certain that they did so with any malice. Does the housewife mourn for the flowers she dooms by plucking them for the dinner table?

Hammer had brought a wheeled retrieval stretcher with him. Martin's slices would fit in it like records in a rack.

There was a little scanner that identified each slice's relative position with the other, and Hammer took down each fragile piece one by one, gently, so that it would not shatter in its brittleness, and put into its place on the stretcher.

It wasn't until he had concluded his grisly task, with all the pieces assembled, that he realized the mistake he had made.

He saw that it was not Martin at all whose body he had reconstructed. Lying there before him eternally frozen was the grotesquely misshapen and elongated body of Claire.

They had made a mistake back at headquarters. They had sent him to retrieve Claire, not Martin. And he had not even known that the Janq had gotten her.

The great frozen emptiness of the barren room closed in. He had to get out.

He rolled the stretcher ahead of him, madness gibbering and drooling at every step, waiting beyond every alien turn of the corridors.

Hammer's chest constricted. He could not breathe.

These weren't Claire's remains. They couldn't be. Not this macabre caricature, this mad embalmer's attempt to create a cadaver from cold cuts.

Hammer caught his breath, sobbed—and slammed the stretcher away from him. It careened across the floor that wasn't a floor and crashed into a far wall.

The thousands of wafers that had been Claire flew in all directions,

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the dry brittle snapping and re-snapping of their shattering echoing up and down the chamber.

They were in tens of thousands of broken pieces, and no one could ever put them together again. Hammer had not even the means of gathering them up, or of determining what was Claire's dust and what was not.

It didn't matter. It wasn't Claire. It couldn't be. This sort of thing didn't happen to beautiful girls who loved you and took care of you and told you you were really something.

So it wasn't Claire, and that meant there was no longer any need to stay in this monstrous place.

But even as he broke and ran, Hammer knew that it *was* Claire to whom final destruction had come, and whose dust would lie forever where it had fallen—or until the Janq returned for a new war—a new gathering of decorations for the walls . . .

Hammer plunged headlong, sobbing, racing back through the rooms he had passed through on his way in.

He bolted around the last corner, still trying to tell himself he was not deserting Claire. It couldn't be Claire. It could be anybody. It could be . . . it could be the Portuguese.

It was a false note; the Janq structure shimmered and faded away.

Hammer was back in the zozzl's burrow, and he knew exactly what had happened. The zozzl, mindless though it was, had played the harmonics of his mind, convincing him that in leaving the burrow he was escaping a place of the Janq.

It had almost worked. Except for that unbidden thought about the Portuguese, Hammer might have kept right on going until he was outside in the forest, beyond zozzl range, right back where he had started.

As it was, he had backtracked far too many precious steps. He had forged deeper and deeper into the burrow as he "hunted" Martin's body, but he had lost much of the gain in his precipitate retreat.

He was still barely just inside—and now he did not know if he could go on. He did not know how many more mind-snaps he could stand from a zozzl as powerful as this. That last experience had been pretty harrowing. Hammer did not know if there had ever been a species called Janq or if there had ever been a war with them, but that had not prevented him from coming close to going over the edge.

But he must have a zozzl. Therein lay his dilemma.

"How do I love thee?" he growled, surging back down the burrow, feeling anything but love.

He deliberately cast caution aside, gaining velocity, hoping his

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momentum would carry him deeper and deeper into the lair no matter what the next mind-snap.

Hammer had finally done it. He had killed himself as surely as if he had put a blaster to his head.

It had seemed such a minor undertaking . . . just slip into the spacesuit, lock out onto the outer skin of the craft, and apply a little heat to the antenna where the planet-gathered moisture had frozen, jamming it.

How he had let himself get parted from the ship he didn't know.

But here he was, adrift in space, utterly lost, utterly doomed.

The act of separation from the ship must have imparted a slight spin to his body, for the glittering edge of the Milky Way was slicing up diagonally across his line of vision, from left to right.

He contemplated its cold glare, and still felt challenge, and knew he could never meet that challenge again.

Then his spacecraft swung into view. It had not soared off into limbo after all.

Maybe he could get back.

Claire beckoned from the nearest port . . . Claire, who did not know how to fly the craft, and who was as surely doomed as he unless he could return.

Surprisingly, he was reluctant to. Now why shouldn't he want to? And why should he feel like a . . . a *Portuguese*?

The mind-snap dissolved. This time Hammer had lost no ground; he had not gone back.

He waxed enthusiastic. Once again he had broken the zozzl's hold, this time quickly. Perhaps there was something, after all, to this notion of Sonnets and Portuguese . . .

He hurried forward. He must be close to the zozzl by now, for fast though a zozzl can burrow, faster can a man's personality pursue it.

Hammer rounded a bend—and drew back in terror.

The creature barring his path was straight out of childhood nightmare.

It was hairy and slavering and alien, a tarantulalike beast half again as tall as Hammer. Its popping red eyes shuttered and clicked as they registered his presence.

The creature drooled green hunger and lunged at him.

He heard Claire's shriek behind him, urging his retreat.

He could not face the monster. He had come all this way to slay it, but now that he was here he could not stand up to it.

And his blaster was jammed. He must get back to Claire and make sure she was safe.

Absolute terror gripped him, raw as emotion, compelling as the impulse to life itself.

Run! shrilled the terror. *Run! Run! Run!*

Yes! cried the voice of ration-

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alization. *Run! You can always tell them you had to save Claire!*

"No!" shouted Hammer. "No!"

It was an end to everything, to hopes, to dreams—to life. But he would not betray his trust.

"Run, Claire! I'll delay it!"

He screamed it out, and now that he had begun screaming he could not stop.

The giant jaws, dirty and twitching, the fetid breath—everything came closer and closer.

Hammer screamed impotent defiance—at the universe—at this great hairy slavering beast—at himself.

But he held his ground. And the monster reached down two hairy legs to hold him and feed upon him.

So all was lost, after all. He had faced the beast, and lost.

The great head pivoted down, the jaws opened wide.

Hammer raised his fist to strike a final futile blow.

Everything changed.

The beast vanished.

In its place was a shy little brown-furred animal.

It was puppy-size, and it poured out love and affection.

It was the teddy bear of the universe—and more.

It was all zozzl.

It was fluffy fur and happy flesh and small bone, and it would weigh next to nothing at all on a spaceship.

And it was without doubt the most magnificent zozzl Hammer had ever seen. The hell he had just been through was worth it.

The zozzl reached out with its mindless emotion, embracing Hammer with love and freely-given companionship, clasping his heart to its, and its to his.

"Zozzl," purred the zozzl's mind. "Zozzl, zozzl, zozzl."

"Zozzl yourself," husked Hammer.

They left the dark lair together, man's personality and bumbling little zozzl, comforting and reassuring one another. It was the cementing of a relationship that would last for each of them until death intervened, as it had intervened and taken Hammers' previous zozzl scarcely an hour before he had lifted from Hermes two weeks ago.

"You little son of a zozzl," grinned Hammer. "You poked around in my subconscious and discovered I love Claire. I didn't even know that myself. I'd better ask her to marry me soon as we get back to Sol—long space trips or no long space trips."

"Zozzl," said the zozzl mind.

Hammer shook his head in the eternal wonder of all successful zozzlers.

"Nature sure has set you fellers up right. I'd call your survival characteristics just about tops. You're little and soft and helpless, and you have to hide in a hole in the ground. If a predator comes along and

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sniffs you out, you drive him off with nightmares—*his* nightmares.

"But if the nightmares don't work, and the predator's about to touch you—as I was back there—then you immediately throw up your second line of defense. And that's the stronger one; it's love. If you can't scare 'em to death, you love 'em to death. Well, not quite to death—just enough to make sure the last thing in the world they want to do is harm you. And then you've got a friend for life, to keep you, and care for you."

Hammer thought for a moment. "I guess it's a dictum as old as life—if you can't beat them, join them. And, of course, you offer more than love and companionship. You offer protection."

Hammer's jaw tightened. "And I'm in need of some of that protection right now."

The *Zozzlers' and Handlers' Journal* had analyzed it all in an earlier number.

"We will not concede that one can become addicted to a zozzl," it had declared primly, "any more than we will concede that one can become addicted to tobacco.

"The use of tobacco is a habit. So is the use of a zozzl, and a man bereft of a zozzl, even as the smoker bereft of tobacco, is distinctly uncomfortable. He is nervous and fidgety, and he grows even more nervous and fidgety until he satisfies the craving.

"On the other hand, once a zozzl user has a zozzl, he derives more satisfaction and ultimate good than a smoker ever can. There is something in the chemistry of man and zozzl that combines, and in the symbiosis makes of each a better being.

"Weight is still a limiting factor in space travel, and until the problem is solved, only the most precious of cargoes can be handled, with deadweight cut to a minimum by permitting only one crewman aboard a ship.

"In view of the long and lonely flights, it is not surprising that up until a few years ago even the most balanced of men experienced trauma as they hurtled through space, alone and boxed in.

"Then zozzls were discovered, and the trauma all but vanished.

"But this is far from the zozzl's greatest contribution. It is true that man was first attracted to the zozzl because of its ability to end traumatic loneliness during long space flights, but, as with many discoveries, the zozzl has proved in actual practice to have a far more significant use.

"Valuable cargoes in one-man ships stripped of all excess weight—and that includes major weaponry and armor—are fit prey for highwaymen. Every spook that puts a blip on the screen is suspect, and if the spook pursues, matching warp for warp and closing in, there can be no doubt of its intentions.

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"Up until the zozzl was discovered, piracy was rampant. Because the economies of space travel require a freighter to carry ten times over a king's ransom to make a profitable trip, pirates can well afford faster ships, the best of weapons, and large crews.

"But zozzls make the pickings slim, and for a good reason: In the days of knighthood and chivalry, only the absolutely pure could seek the Holy Grail; only those chaste in word, thought and deed could aspire to such a quest. Now, a zozzl is no Holy Grail—far from it—but the comparison between the Grail seeker and the zozzl hunter is worth making. The zozzl hunter must be pure, too, pure in a special way. He must be a self-honest pragmatic. All others fall before the zozzl's onslaught. Even the self-honest pragmatic has his difficulties, as we know.

"It is all very simple. The zozzl deals in total deceit; the only answer to total deceit is total honesty. None but the self-honest pragmatic can produce this total honesty, especially under the stress of a mind-snap.

"What counts in zozzling is being true to one's self, even to the point of death, for the zozzl will not be true unto death. At the last moment it will switch sides and embrace the hunter.

"All of which means that the space pilot who is a successful zozzler is a very valuable man indeed. The zozzl's total, one hundred percent rejection of all but the self-honest pragmatic rules out zozzl use by pirates; they can no more be true to themselves than they can to anyone else.

"But a pilot with a zozzl on his arm is bound to be the one who wins the shipping contract, because the zozzl is absolute evidence that the shipper is placing his valuable goods in an honest man's hands.

"And those honest hands are safe hands . . . as any pirate who has ever tackled a zozzl-pilot team knows."

Hammer, body and personality reunited, hummed a snatch of bawdy space song as he planned to deal with the spooks.

His face was still gray with fatigue, but sleep would fix that. Meantime, he was happy and relaxed.

"Come on, Portuguese," he said to the zozzl, calling it by its new name. "I didn't fool those spooks' lookout a bit when I carried my dead zozzl aboard two weeks ago, but we'll fix them now." He grinned. "I don't even think we'll have to bother to lift off."

Man and zozzl met minds, and under the man's guidance the zozzl discovered that its probe was no longer restricted to the diffused and short range of broadcasting through a full three hundred sixty degrees, but that the probe could be directed and tightened up and

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hurled out along a narrow path in the gulf of space.

Hammer had said it before, but he said it again as the probe scanned for the spooks. "You are a most powerful zozzl indeed."

The spooks were still in orbit, hunting for Hammer, the next time their formation passed overhead. The probe reached out.

It wasn't even a fight. First one, then another, and then the third ship tumbled out of control, managed recovery, and headed away from the planet at top velocity.

Once more that day Hammer was awestruck. "You didn't have to make them think *that*," he said to the zozzl. "Just the drowning sequence would have been enough."

The zozzl, perched on his shoulder, rubbed its soft fur affectionately against his cheek.

Hammer marveled a moment more and then slipped into his webbing preparatory to lift off.

"O.K., Portuguese," he said. "We're behind schedule with a packet of platinum for Darna and a load of llogyl pearls for Halcyon. Let's go star-tracking!"

"Zozzl," said the zozzl mind.

Second warp out, Hammer went to bed. He dreamed of Claire, and all the while his mind felt warm and reassured, and cuddled by something soft and furry and twice as happy as a puppy.■

IN TIMES TO COME *Next month's cover—by Kelly Freas—is taken from ". . . And Comfort To The Enemy," by Stanley Schmidt. (That's Stanley—not James H.! But it seems the Schmidts are good at science fiction, whichever way they spell the name.)*

It's a highly interesting sort of problem. Given a race with highly developed interstellar technology, given that they encounter, on some planet they explore, a race having not even cities: How could this non-technical race give the possessors of a mighty technology so violent a case of the Screaming Horrors and Awful Terrors that the whole interstellar race acquired a permanent, deep phobia against insulting strangers?

For they most definitely did. The forest-dwelling primitives administered a form of punishment adequate not only to assure that the interstellar explorers would never again bother them—but would never again annoy any strange culture!

And there was just one minor accident that kept the invaders from losing their technological secrets too . . .

THE EDITOR

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dramatic mission

What can a low-oxygen-pressure, light-gravity people such as Mankind offer for trade with an extra-high-gravity super-pressure hydrogen-ammonia people? It's weightless, invaluable, and illogical . . .

ANNE McCAFFREY
Illustrated by Leo Summers

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Helva turned the sound down, pleased that all the embryo-tube racks were being pulled out, but not at all pleased with the mauling the crewmen were giving her in the process.

They didn't really need to add to the scars already made by the metal frames on her decks, or the stains of spilled nutrients on her bulkheads. But she was silent because even the pilot's cabin showed unmistakable marks of long tenure and Kira Falernova had been a tidy person. However, Helva had no wish to go to Regulus and show this shoddy interior to whichever "brawns" were waiting to team up with her.

She said as much to the other "brain" ship sitting near her, to one side of the commercial pads at the Nekkar spaceport.

"That's a silly waste of credit, Helva," Amon, the TA-618, replied, his voice slightly peevish. "How'd' you know your new brawn will like *your* taste? Let him, or her, pay for it out of his allowance. Really, Helva, use some sense or you'll never buy free. And I don't see why you're so eager to be saddled with a brawn anyway."

"I like people."

Amon made a rude noise. Since he'd landed, he had steadily complained to her about his mobile partner's deficiencies and shortcomings. Helva had reminded herself that Amon and Trace had been together over fifteen standard years and that was said to be the most difficult period of any long association.

"When you've had a series of brawns aboard you as long as I have, you won't be so philanthropic. And when you know what your brawn is going to say before he says it, *then* you'll have a little idea of the strain *I'm* currently under."

"Kira Falernova and I were three years on this stork run—"

"Doesn't signify. You *knew* it was a short-term assignment. You can put up with anything on that basis. It's the inescapable knowledge that you've got to go on and on, twenty-five, thirty years—"

"If he's all that bad, opt a change," Helva said.

"And add a cancellation penalty to what I'm already trying to pay?"

"Oh, I forgot," Her reply, Helva realized the moment the words were out of her mouth, was not very politic. Among his many grievances with the galaxy at large, the extortionate price of repairs and maintenance made by outworld stations ranked high. Amon had run afoul of a space-debris storm and the damage had required a replating of half his nose. Central Worlds had insisted that the cause was his negligence, so it was therefore not a service-incurred or compensable accident.

"Furthermore, if I opted," Amon went on sourly, "I'd *have* to take whoever is up next for assignment

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with absolutely no refusal right."

"That's too true."

"I'm not fat with double bonuses from grateful Nekkarese."

Helva swallowed a fast retort to such an unfair remark and meekly said she hoped that things would soon look up. Amon didn't need advice she realized. He only needed a sympathetic listener.

"You take the advice of one who's been around, Helva," Amon went on, mollified by her contrition, "and take every solo assignment you can get. Rack up bonuses while you can. *Then* you'll be in a position to bargain. I'm not. Oh, here he comes!"

"He's in a hurry, too."

"Wonder what lit *his* jets," Amon sounded so disagreeable that Helva began to wonder just how much the brawn was at fault. Brain ships were people, too.

Just then, Helva could hear the brawn's excited greeting over the open ship-to-ship band.

"Amon, man, get us cleared and listed. We got to get back to Regulus Base on the double. I just heard—"

The band went dead.

It was so like Amon to be selfish with good news, too, that Helva did not take offense. Good luck to him, she thought as she turned on the outside scanners and watched him lift off. If he did get a good assignment and the delivery bonus, he could pay off his debt. He might even resolve most of his problems with his brawn. The man had seemed nice enough when he'd paid a courtesy call on Kira and herself the day they arrived at Nekkar. But it was petty of him—if the brawn had heard, the news could not have come via tight beam.

"Nekkar Control, XH-834 calling."

"Helva? Had my hand on the switch to call you. Our ground crew treating you right? Anything you want them to do, you just let 'em know," answered the affable com man.

Considering Nekkar's recent radiation disaster which had rendered its entire population sterile, you'd think *they'd* be as sour as Amon. True, she and Kira had ferried in one hundred thousand embryos to give the population continuity, so the officials knocked themselves out for her.

"I was wondering if you could tell me why the TA-618 left in such a hurry."

"Say, yes, that's something, isn't it? Never know who's around in the next system over, do you? I always said, a galaxy's got room for all kinds. But who'd ever think people . . . I guess you could call 'em people . . . would want any old archaic plays. Can you imagine that?" And infuriatingly the com man chuckled.

Amon had problems knowing ahead of time what *his man'd say?* Helva thought, impatiently

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waiting for this jovial soul to say anything worth listening to.

"Well, not really because you haven't told me what you heard yet," Helva cut in as the man seemed likely to continue editorializing.

"Oh, sorry. Thought you ships'd all have your ears . . . oh, pardon the slip . . . to the rumor block. Well, now, generally my sources are very reliable and this came to me from two sources as I was telling Pilot Trace. A survey ship out Beta Corvi way registered some regulated-energy emissions. Pinpointed them to the sixth planet which had . . . of all improbabilities . . . a methane-ammonia atmosphere. Never heard of any sentients before developing in that kind of environment, have you?"

"No. Please go on."

"Well, before the crew could get an exploratory probe treated to withstand that kind of air; *ha, ha,* air, that's good."

"Consider that what we breathe might be poisonous to them," Helva suggested.

"Oh, true, too true. Any rate, before the crew could shake a leg, the Corviki had probed them. What do you think of that?"

"Fascinating. I'm hanging on your words."

"Well, those Survey men are on their toes, I'll tell you. Didn't let an opportunity like this slip from their grasp. Offered to exchange scientific information with the Beta Corviki and invited 'em to join the Central Worlds Federation. Say," and the man paused to think, "how'd the Survey know you were high enough on the Civ-scale to qualify right off if they hadn't even got a probe down to the surface of the planet?"

"If the Beta Corviki could contact our Survey ship, and if they are fooling around with regulated-energy emissions detectable outside their solar system, we might not qualify on their Civ-scale."

"Oh. Hadn't looked at it from that angle." The man's resilience was incredible for he paused only briefly before taking up again. "Well, we *have* something they want badly," and he sounded as pleased as if he had himself invented this commodity. "Plays!"

"Plays?"

"That's right. Guess it'd be hard to develop any art forms on a methane-ammonia planet. At any rate, the story is that they will exchange some energy process of theirs that we need for our old plays."

"New lamps for old?" Helva murmured.

"How's that?"

"That doesn't explain why the TA shot out of here so fast."

"Oh, well, that's easy. Calls are going out all over the sector for you ships to report in. Say, you being the ship who sings and all, this ought to be right up your alley."

"Possibly," Helva temporized.

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"But I'm due to be assigned a new brawn partner and they wouldn't send a green team out on a mission of this importance."

"You mean, you don't want it? Bruce said there was a triple bonus attached that any ship in its right mind would fight for."

"I am in my right mind but there is something more important to me than a triple bonus."

The com man's silence was more eloquent than any cliché he could utter. Fortunately the tight-beam channel warmed up and Helva excused herself to open her end of it.

The transmission began with a mission code so she flipped on the recorder and monitored the message.

She was directed to proceed immediately to Duhr III, en route to Regulus Base. She was to receive four official passengers at the University Spaceport, Lock #24 and proceed with no further delay to Base.

"If those were orders, ma'am," the com man said when she returned to his channel, "I can give you instant clearance."

"Not quite yet, Pal. I've got to pick up some passengers and I'm not going to go looking like a tramp ship. You did say that if there was anything I wanted—"

"Yes, yes, and we mean it," the Nekkarese assured her fervently.

So Helva flashed towards Duhr III at speeds no human passenger could have endured, with holds and cabins gleaming and fresh, and bunks for full-sized humans placed where cradles for hundreds of embryos had recently swung.

She had borne in mind Amon's sour comments and prevailed upon the willing foreman to make certain judicious chemical additions to the standard paints. The soft greens in the pilot's cabin had been impregnated with pumice from Thuban so that by changing light tones, she could alter the shade enough to suit any personality. She'd had the galley done in a good strong orange, a thirsty color but one calculated to make people eat fast and leave. The main cabin was an off-white with blue tones and the others blues and beige. Trouble with Amon was, Helva reflected, he didn't use his wits. Or maybe, she amended tolerantly, he simply hadn't thought of using color-psychology on his brawn. The burden of adjustment, she'd been told, rested with the resident partner.

It hadn't taken long to refurbish her interior once the finishes were mixed for the foreman and his crew were efficient. The neat clean interior would have been worth a far longer delay in her estimation, and made her unashamed to be carting passengers to Regulus. In fact, she looked forward to the trip. It was always stimulating to meet new people. And new brawns, she added firmly to herself. However,

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the carrier fee of these official passengers would pay for the spray job, so erase Amon's advice.

And he wanted "pay-off," huh? Helva mused as she hurtled through space towards the far wink of Duhr. Well, even a brain ship had to have some incentive. Idly she ran a check on her own indebtedness and was agreeably surprised at its rapid reduction.

How extraordinary! If she could keep going at even half her present rate as a brawnless ship, presumably she could buy herself back from Central Worlds within three standard years. Her own mistress after ten years of service? It didn't seem possible. Why, Amon had been in service close to one hundred fifty years and he complained bitterly about the size of his debt. Of course, he was the complaining type so she could discount a lot of his statements as exaggeration. And there were "free" ships. The YG-635, in Amon's class, was free. He did general work for the Scoprii Federation and had been modified to handle their environment.

Then, too, she'd had some lucky breaks. Not with her first assigned brawn, Jennan, and she considered the bonus for that fateful Ravel mission "blood money" even if it was charged on the credit side of her ledger. She'd drawn full salary for the Antigone plague assignment, plus an efficiency bonus. And, while she and Kira had been partnered on the RCA Nekkarese stork run, she'd drawn double pay because Kira was hired by RCA. The Alioth incident had carried a finders' credit on the 728 and now the staggering Nekkarese gratuity. She'd had no major repairs—not that she ought to, a new ship just commissioned—so her financial position was very rosy, in spite of the unbelievable expenditures for her early care and maintenance.

According to Central Worlds' charter, no sentient entity could be placed in a condition suggesting peonage. This included any of the so-called shell people, the males and females who, though handicapped physically, were mentally alert and capable. Some, like Helva, were born with hopelessly crippled bodies, and had been relinquished by their parents to the wardship of the Federation. At three months, the babies had been placed in titanium shells, damaged neural circuits bypassed so that reflexes controlled mechanical locomotion and complex appendages. Before puberty, the shell person was surgically stunted, additional delicate adjustments were made in the cerebrum and he or she was encapsulated in a permanent shell. This would serve as the protective receptacle whether the ultimate career was as a plant supervisor, town or city manager, port authority controller, data-retrieval consultant, or the controlling "brain" of a ship such as Helva, partnered with

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a mobile "brawn" in Central Worlds service.

All the expenses of early childhood, educational and surgical costs were charged against future earnings. Their rights as people, human in emotional and intellectual capacities if not performance, were rigidly safeguarded by a number of interested agencies. The fallacy of such safeguards was that the shell people had been so conditioned—for their own protection and sanity—for their eventual life of service that they rarely bothered to exercise the privileges so fanatically won for them.

Even if Helva did pay off the backlog of debt, she would undoubtedly contract herself back to Central Worlds service for she enjoyed the work. Of course, it would be rather soul-satisfying to be able to tell Central Worlds to go into a tight orbit once in a while. And then, she could hire or fire a brawn as she chose. Yes, it would be worthwhile to "pay off" for such indulgences.

She still couldn't see why Amon didn't just take the penalty if Trace was such an irritant. It wasn't as if Central Worlds would disown a deeply indebted ship—Well, it was not her problem. But there'd better be a brawn for her when she touched down at Regulus with her passengers. She had rights, indebted or not.

Despite her speed, having no need to keep day separate from night the run seemed endless; she never slept and the chronos measured off meaningless hours. She was conditioned for a partner, for someone to take care of, to do for, to live with. She liked emotional involvement with other humans: the interchange of ideas, yes, even the irritation of contemptuous familiarity. These were all experiences she wanted firsthand, not sourly from a disenchanted old brain.

The spaceport of Duhr was partially hidden in an imposing mountain range in the northeastern hemisphere. On the other side and within the mountain itself was the tremendous administration complex of the university plant.

Landing at Lock #24, Helva identified herself and the extendable worm-maw of lock facility unerringly sought her passenger hatch. Two men waited for the connection to be made: one lounging against the trundlecart stacked with baggage, the other occupied solely with twitching at various parts of his tunic or glancing at his wrist unit.

"No time to waste, now. You know which luggage goes where?"

The porthand didn't bother to confirm but smartly guided the trundler onto the ship, across the main cabin and down the corridor.

"Why, it looks freshly commissioned," the official-type murmured, looking about him in con-

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siderable surprise and grudging approval. He paused in his inspection at the galley and peered around, looking into closets and drawers. "Where's the supply key on this class ship?" he asked the porthand who was stowing the cases in the cabins.

"Ask the ship," the porthand suggested. "Or hadn't you noticed this is a BB."

"Oh, good heavens," the official gasped. "I beg your pardon, sir or madam."

Helva noticed tolerantly he still didn't know where she was actually located for he did a kind of circular bow, designed to catch every corner of the main cabin.

"Are you provisioned to serve four normal humans all the way to Regulus Base?"

"Yes."

"Well, that's a relief. We'd no idea what transport would be coming, this has all happened so fast. And a BB ship! Well, that is flattering. You *can* adjust internal gravity in flight, can't you?" he added, glancing up from the notations on his wrist unit.

"Yes. What are the requirements? I have had no briefing."

"None?" This concerned him deeply. "Oh, but you should have. You really should have. No, that's wrong. Cancel that. Although the Solar did request . . . well, as you can adjust that's no problem then, is it?"

Not *another* scatterwit, Helva groaned to herself. "If you will indicate the gravity required—"

There was an eruption of applause and cheers at the top of the lock tunnel. The official glanced apprehensively towards it. "They're coming now. The Solar will tell you, or Miss Ster, his medical attendant. You must be prepared to take off immediately, you know."

The porthand jauntily crossed back through the main cabin, flipping Helva's column a cheery salute as he exited. "Gear's all stowed for takeoff."

"Very good," his superior mumbled absently as he followed him to the lock. The slight frown was immediately replaced by a fixed smirk just as the noisy party started down the corridor.

The four people in the front rank must be her passengers; they wore shipsuits. Helva enlarged the picture and it was easy to see which one needed controlled gravity. Half-grav, at least, she decided. The man walked with that terrible exertion of someone unused to and uncomfortable in full grav, whose muscles strained to work against the heavy drag. Helva could see that even his face muscles sagged: a pity, for he was a handsome man. Yet he kept his shoulders erect, his head high, too proud to permit physical disability to rob him of dignity.

She was so interested in him that she got only a glance at the

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other man and the two women before everyone had swept up to the lock.

The port official stepped hastily out of the way as a very distinguished older man with a cluster of academic knots on his tunic held out his hand to the striking woman beside him.

"Here's your personal magic carpet, to carry you to Regulus Base. May I say that it has been a great personal pleasure, Ansra Colmer, to meet you? Officially, the University at Duhr appreciated your willingness to interrupt a personal visit with Solar Prane to give our students the benefit of your art. Your 'Antigone' was inspired: your 'Phorus II' monologue made me appreciate for the first time the vital interplay of color, odor and rhythm. You're an amazingly versatile exponent of your art and one, I trust, soon to receive the accolade, 'Solara'."

The smile on Ansra Colmer's carefully composed face seemed to stiffen slightly and there was absolutely no echo of humor in her glittering eyes.

"You are too kind, Director, particularly since Duhr has its own Solar," and she made a half turn towards the grav-sufferer. "How can you bear to part with him?" And, not waiting for an answer, she strode past the lock and into the main cabin. With her back to the noisy well-wishers, Helva could see that her expression was now one of suppressed anger and hatred.

The director cleared his throat as if understanding all too well her innuendo. He bowed gravely towards the Solar.

"You can't be dissuaded, Prane?"

"Central Worlds has made too strong a representation of its needs, Director. It is my duty to my profession to accept, hoping that any honor merited in the undertaking reflects on you for your many kindnesses." Prane's voice was rich, resonant, the voice of the trained professional performer. If Helva noticed the odd hollowness, the occasional wispiness as if the tone were half-supported, her sensors were keener than the ears of the adoring crowd of young students and patient officials.

"Solar Prane will be back in triumph before the term is ended," said the other male passenger, "preserved by the skill of Miss Ster."

"Truly spoken, Davo Fillanaser," the director agreed heartily, turning now to shake the hand of the young woman beside Solar Prane.

Helva was fascinated by the various undertones in this farewell scene. It ought not to be a boring trip, at any rate.

"We must not hold up the pilot any longer," Solar Prane said. With a charmingly apologetic smile, he waved broadly to the crowd which sighed of its sorrow and murmured regrets, even shed a few tears, as he stepped backward into

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the lock, his arm hooked through Miss Ster's.

The man addressed as Davo Fillanaser ranged himself beside them, smiling and waving, too.

Solar Prane turned his head towards the young woman and Helva saw him mouth a quick sentence.

"I can't stand much longer. Tell the pilot to close the lock."

Immediately Helva activated the lock portal.

"Help me, Davo," Kurla cried, as the crowd was shut from view. She threw her arm around the Solar's waist as the man's large frame seemed to collapse against her.

"Damn fool," Davo muttered, but he used extreme care in assisting—as if he were concerned about hurting Prane.

"I'm all right. I'm all right," Prane insisted in a hoarse whisper.

"That farewell party was madness in your condition and in full grav," Kurla murmured.

"The hero must have a hero's farewell," drawled Ansra Colmer. The smile on her face as she turned towards them was sincere now, sincerely vicious; and her eyes sparkled with intense pleasure at Prane's debility.

"The hero is not yet on his shield, Ansra," the Solar replied, almost as if he relished the notion of defying her. He put Kurla from him, touched Davo's supporting hand which fell away, and slowly, carefully, crossed the cabin.

"Misfire, Ansra?" Davo asked, following the Solar at a discreet interval.

"Ansra's steel gives me backbone," the Solar chuckled and Helva could have sworn, again, that these bitter undercurrents were therapeutic. The Solar's medical attendant evidently did not agree.

"That is quite enough," she said with a professional impersonality and, disregarding Prane's independence, threw an arm around his waist and supported him the rest of the way towards the couch. "This ought to be a shock-mattress," she muttered, flipping back the mesh blanket. "Good." Deftly, she turned the Solar, easing him down to the bed. She then extracted a medical recorder from the pouch at her side. Her expression was detached and her eyes intent as she ran a check on him.

Helva peeked at the dials and gauges and was a little puzzled by some of the readings. The heart strain was not at all excessive, although the pulse was rapid from exertion. The blood pressure was too low for someone under stress, and too high for a man apparently used to low-grav conditions. The more perplexing reading was the EEG. Prane was trembling now with reaction to extreme muscular stress: supine, he looked old, and tired.

"What are you giving me now, Kurla?" he demanded sharply,

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rousing as he saw her preparing an i.v. spray.

"A relaxant and . . ."

"No sedations, no blocks. I forbid it."

"I'm the medical attendant, Solar Prane," she said in a firm, impersonal voice.

His hand trembled as he grabbed for her wrist but Helva could see the fingers pressed deeply into her flesh. Kurla Ster looked him directly in the eye.

"You cannot tolerate lift-off without some sedation, after exerting yourself for that party—"

"Give me the relaxant, Kurla, but nothing more. I can cope with the discomfort . . . alone. Once in space, the pilot can adjust the gravity."

It was a contest of wills, with Davo an interested spectator. Curiously enough, Helva noticed that Davo had been on Prane's side, judging by the sigh the man exhaled as the young man replaced the other vials in her pouch and injected but one medication.

"Where is that pilot?" she demanded of Davo as she left the cabin, sliding the door firmly shut behind her.

"Pilot?" Ansra Colmer repeated, idly swinging the pilot's chair on its gimbals. "You were too engrossed in adoring worship of the Solar's classic profile to heed what journey briefing we received."

"Ansra, sheathe your claws. You're becoming a bore," Davo suggested, propelling Kurla to a seat with a warning smile. "This is a brain ship, Kurla. No other pilot is necessary. We need only settle ourselves down for the trip."

"Miss Colmer, if you don't—"

"And be quiet," Davo added firmly to Kurla, his hand on her forearm, cautioning obedience. "The sooner we take off, the better it is for Prane, right?"

She subsided, still rebellious. To aggravate matters, Ansra Colmer smiled triumphantly at her capitulation.

"Let's go," Davo suggested, nodding over his shoulder towards Helva.

"Thank you, Mr. Fillanaser, and welcome aboard the XH-834," Helva said quietly, achieving an impersonal tone with some difficulty. "Fasten your harness for takeoff." Ansra Colmer interrupted her swinging only long enough to comply. "Miss Ster, may I inquire if Solar Prane's disability will be affected by standard take-off velocities?"

"Not when he is cushioned by the shock mattress."

"And by drugs," added Ansra snidely.

"Solar Prane is not under sedation," the m.a. snapped, trying to rise, but restrained by her harness.

"Ansra, leave her alone! Prane is not on drugs and never has been!"

"I am receiving clearance for lift-off," Helva said, mendaciously fore-

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stalling another exchange. She even leaked a little engine noise into the main speakers.

As she began to jockey into position, Helva kept an eye on Prane. He was cushioned by the shock mattress, all right, but if he could barely tolerate full grav, blast-off would rack him with pain. She decided a fast takeoff would spare him more than a gradual acceleration. She piled on the power and watched him black out from pain in a brief minute.

The instant she was free of Duhr's attraction and on course for Regulus, she cut all thrust, even the little spin she usually maintained for the comfort of her passengers. He was unconscious, but the pulse in his throat beat regularly.

"I've got to get to him," Kurla was muttering in the main cabin.

When Helva looked there, the medical attendant was ludicrously flattened against the far wall of the main cabin.

"Then move slowly," Davo was advising her. "You've been in half grav long enough to know violent action brings equally violent reaction."

"If you only knew how asinine you looked," Ansra chortled.

"Solar Prane passed out before maximum thrust, Miss Ster," Helva reported, "but he appears in no distress."

"I must get to him," Kurla insisted. "His bones are so soft."

An orthopedic problem? And he was permitted in space? Were they out of their minds? Then why such cerebral excitement?

"Shall I return gravity? The shock web will . . ."

"No, no," Kurla protested.

"If you think I'm going to travel free fall all the way to Regulus, you've another think coming," Ansra cried, the amusement wiped from her face.

"The longer he has without any gravitic stress—"

"Too bad," Ansra snapped back. "I know what happens to *me* in constant free fall and I'm not having—"

"Flabby muscles, dear?" Davo interrupted her. "You can always join us in a thrilling workout of isometrics. And you'd better get used to free fall. You certainly heard it mentioned in our briefing . . . since you're so attentive to briefings . . . that the company will play entirely in free fall. Get used to it."

"I also heard it mentioned that our minds were what would be transferred. It's my body that's involved at present."

"And it's Solar Prane's body that must rest now," Kurla flung back, managing to move forward towards the cabin. "He *is* only the director of the entire company."

"In the interests of compromise, ladies," Davo put in, "let's use half-grav while we're awake, and free fall when we're all snugly meshed

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in at night and don't know any better."

"Can that be arranged?" Kurla looked hopeful. "The unit had to be kept at half full grav on Duhr because of the power required."

"Half-grav suit your gracious supremacy?" Davo asked Ansra, mocking her with a bow.

"He won't last, half-grav or free fall," she countered, grimacing as she heard the cabin door click shut behind Kurla.

Ansra flipped off the harness, twisting in the chair for the most comfortable position from which to regard Davo unobstructedly.

"I don't know why you continue to defend a dying man, Davo. Don't argue; his mind has been affected. I can see it. Don't forget, I knew him rather well," her smile suggested many intimacies. "And it's his mind that must be transferred." Suddenly her whole attitude changed subtly. "Had you never considered being more than just a supporting actor, Davo?"

Helva took a closer look at the man. She'd thought him a friend or assistant of Prane's, not another actor. He had none of the obvious professional mannerisms the other two displayed.

"You've an excellent reputation in the Guild as a fine classicist," Ansra was saying. "Why do you continue to let Prane dominate and dictate your life?"

Davo regarded her imperturbably for a long moment before he smiled carelessly. "I happen to respect Prane Liston professionally and personally . . ."

Ansra made a rude noise. "You've fronted for him like an understudy on matinee day. Taken his lectures while he 'experimented' in null-grav movement! Ha! Covered for him so the rank and file would not know their hero's frailties!"

"My motives are not as suspect as yours, detouring two months away from your last engagement to 'visit' your old friend, Prane Liston? *Ha* for you."

Helva detected the flush of anger under the woman's cosmetized skin.

"My visit, Davo Fillanaser, was most opportune," she replied with a saccharine smile. "And according to our briefing, once one is transferred . . . how was it phrased, empty envelope? . . . to the envelope awaiting each of us on Beta Corvi, external appearance will not matter. Ability will. I always thought you showed poor judgment to opt the classics, Davo, for you have such a lean and hungry look that you must always be Iago or Cassius. You could be . . . Romeo—on Beta Corvi." Her smile was dazzling.

"Not, of course, while Prane Liston remains director *and* Romeo, huh?" Davo leaned towards her, his eyes sparkling, but his lean, dark face inscrutable. "You won't believe the truth, even when you hear it, will you, Ansra? And you

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just can't believe that Prane Liston is no longer besotted with Ansra Colmer."

"*That* is not at issue at all," she said with lofty indifference.

Davo merely smiled. He leaned back in the couch and matched her mood. "You've got your own director lined up, huh? One who'll let Juliet dominate? Then, with a grateful but weak Romeo like me, you'll look twice as good without having to work half as hard as Prane makes you. Oh, come off it, Ansra," he advised, impatient with her machinations. "Prane always could drag the very best performances out of your lazy hide.

"But that's not important, not in this production. There's more at stake than your self-consequence. Or did you really listen to the briefing at all? Those Beta Corviki can regulate the half-life of any unstable isotope they choose. If Central Worlds gets such techniques, it'll revolutionize pile drives and get us across the galactic seas —" He paused, gave a derisive laugh. "Why, if our petty prancing pleases them, you might play in the Horsehead Nebula next season, Ansra Colmer. Or," and his eyes narrowed speculatively, "should I say, Solara Ansra?"

"Then think carefully, Davo," she urged, her pose alert and tense, "of *all* that is involved. I don't care for altruism: it signs no contracts and pays no salaries. I wouldn't have considered this tour for a moment if it weren't for that Corviki transfer device."

Davo stared at her with such sharp attention that she smiled slightly.

"Really, Davo, what possible significance could things like those Corviki find in Romeo and Juliet, an outmoded love story of an improbable social structure."

"You're more the hypocrite than even I'd thought you."

"Delusions are what we create, not what we believe. And, with a mind-blasted Romeo, the whole thing would be worthless but for those transfer things. Why, if that device can work in a methane-ammonia atmosphere, it can work anywhere. It could open a whole new audience dimension—"

"And Solara Ansra as top-ranking performer in the new medium?" Davo asked, his dark eyes intent on hers.

Helva wondered if he had caught the fallacy in her argument.

"Why not? I don't need to be an m.a. to see Prane's dying. He's so weak he'll dissolve under pressure. Why, his headbones are so soft with mindtrap—"

"Bones, yes, but not his brain—" Davo snapped. "And not mine. *I* remember what I owe the man, dead or dying, and I'm with him all the way. Remember that, Ansra Colmer. And if you don't cease needling that nice child, if you don't prove to me that you're going to integrate into the company. I'll

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cite a jeopardy clause on you. There is too much at stake in this far-out dramatic mission to risk a dissident among us. The computers picked Prane, remember, on the basis of performance and ability. With all his medical handicap, he still came out the highest on the probability profile. You shape up, Ansra, or I'll give the computers a few bits of psycho data on you to update your profile."

He swung himself from the chair far too energetically for the half-grav and bounded towards the ceiling. He corrected and slow-stepped towards the galley.

"Auto-Pilot, erase the previous conversation between me and Davo Fillanaser," Ansra commanded in a hard, angry voice. "Is that order clear?"

"Yes," Helva replied, careful to sound dry and mechanical.

"Comply. Which cabin has been assigned to me?"

"Number 2."

As Helva watched the erect figure of the actress undulate down the corridor, she felt an odd, atavistic satisfaction in having lingered for refurbishing at Nekkar, and in knowing that her interior was, as always, in order: shipshape.

It was not a pleasant evening, certainly not what Helva had anticipated when the orders were taped in. Davo was silent and hyper-alert, watching Kurla and Ansra, unobtrusively passing Prane's open cabin frequently. Kurla was distressed though she tried to conceal it. Helva, however, had heard Prane reject medical assistance, and, by her sensors, knew he was feigning sleep to prevent argument. Ansra's sullen cold look followed the young medical attendant everywhere. Helva spoke only when spoken to, accepting the part of an automated ship, though Davo presumably knew what she was.

His discussion with Ansra had done nothing to aid Prane, antagonizing her and adding to the tension within the ship. Helva wondered if he had deliberately led the woman on to expose her ambitions, with herself, Helva, the unsuspected witness to the actress's intentions. Yet if he wanted Ansra to compromise herself before witnesses, why give her the second chance? Did Davo really trust the woman enough to think she'd reform?

Well, this wasn't Helva's problem, although she would play back that interlude if necessary. Let another ship worry about the conniving actress, the lovelorn m.a. and the dying actor. Amon could have the whole bit. "Romeo and Juliet," at free fall in a gas atmosphere! Shakespeare for stabilizers? Helva concurred with Ansra: the whole idea was ridiculous!

A long shuddering sigh broke into her reveries. A restless sleeper? No, Prane was not asleep though

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everyone else was secure under the mesh blankets. And Prane needed rest the most.

" '!Amen, amen! But come what sorrow can
It cannot countervail the exchange of joy
That one short minute gives me in her sight.
Do thou but close our hands with holy words,
Then love-devouring death do what he dare,
It is enough I may but call her mine!' "

His voice rose to the challenge of the lines, rich, tender, unsullied by whatever debilitated his physical self. The laugh that followed, however, was hollow and bitter.

" 'I am no pilot, yet, wert thou as far
As that far shore walked by the farthest sea
I would adventure for such merchandise.' "

Another long pause, then

"Thou desperate pilot, now at once run on
The dashing rocks, thy seasick weary bark!
Here's to my love!' "

Another pause so long that Helva wondered if he slept.

" 'Ah death, where is thy sting?
O Grave, thy victory?' "

Helva felt herself wince at the scorching regret, the yearning in that emotion-laden voice. He wants to die! He expects this venture to kill him and he wants to die.

Helva comforted herself with a string of Kira's most colorful oaths, wishing she knew more about the mechanics of this Beta Corvi psyche transfer. Well, if they were, as reputed, able to stabilize isotopes, they obviously were energy-engineers of a remarkable genius. Now, considering that the brain generated electricity, a very primitive form of energy, so presumably the electrical charge could be transferred from one receptacle to another. In theory, easy; in practice? There could be a power loss, a faulty imprint in the receiver. Someone could return half-witted? Helva abandoned that thought on the grounds of insufficient data. Besides, this was not her problem.

And she doubted Prane would be able to affect his demise: not with Kurla Ster determined to keep the mortal spark in his own husk. She knew nothing of these Beta Corviki but it was a convention among all the sophisticated societies she had encountered that sentience was not permitted to waste itself. Kira Falernova had found it excessively difficult to suicide.

And, if Kurla was not stupid, which she didn't appear to be despite this terrible infatuation for Prane, she must be as aware of his death wish as his physical pain.

Helva's thoughts chased around directionless. She had so few facts, including how Prane Liston could have reached such a state of decay

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in today's diagnostic-preventive and corrective medical climate. He was patently in his second fifty years- but soft bones? Bone marrow can be calcium shot, phosphrous supplemented to the diet. Yet Ansra had made sly digs about drug addiction. Said his brains were soft . . . no, his head bones. Helva corrected herself . . . his head bones are softened by mindtrap." Yet mindtrap was a harmless drug; mind-expanding, yes, but long and widely used by anyone who wished to retain information without loss. The adult mind loses one hundred thousand neurons a day. An actor couldn't afford memory loss. Was it possible that mindtrap, overused for a long period, could build up a harmful residue injurious to the bones?

Helva tapped the ship's memory banks but there was no recorded incidence of any side effect for mindtrap. An actor, however, playing on hundreds of planets, exposed constantly to some cosmic radiations, suffering a minor breakdown of cell-coding? A protein lock? Surely some medical engineer would have noted it, could isolate the faulty enzyme and correct?

Helva looked in on the sleepless man. He was murmuring speeches now, changing his voice as the lines went from character to character. Entranced, Helva listened through the ship's night as scene after scene poured from the Solar's lips, word perfect. Shortly before "dawn," the litany ceased as sleep finally bestowed her accolade of peace.

Dawn came and went. Helva performed the routine check of all systems, ran a scan on detectors and established that there were no ships within hailing range. She was irritated—and relieved.

The first one to stir was Kurla. She drifted immediately to Prane's bedside. Her concern dissolved as she found him sleeping quietly, the fatigue lines smoothed from his face. Her own expression infinitely tender with love, the girl withdrew, pulled the door across and floated over to the galley.

Davo joined her shortly. "How is he this morning?"

Defensively Kurla started to go into medical detail.

"I'm not at all interested in your lover's internal economy—"

"Prane Liston is not my lover."

"Oh, hath desire outstripped performance then?"

"Davo, please!"

"Don't blush, my dear. Only teasing. However, a simple yes or no will suffice. Can Prane rehearse today? That free fall staging is going to be difficult and he mentioned wanting to go through several scenes now when he has more time. Helva can oblige us with free fall as we choose. Can't you, Helva?"

"Yes."

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"It sounds so human," Kurla said, suppressing a little shudder.

"*She,* please, Kurla. Helva is human; aren't you, Helva?"

"Oh, you'd noticed?"

Davo laughed at the consternation on Kurla's face.

"My dear Miss Ster, surely you, a medical attendant, would have tumbled to the identity of the captain of our ship?"

"I've had a lot on my mind," she said, lifting her chin defensively. "But I apologize," she added, swinging round, "if I've offended you, Helva—" then her eyes rested on Prane's closed door and her face flooded with color.

"*You* have been the soul of discretion," Helva replied, aware of the girl's sudden confusion. "As *I* try to be," she added so pointedly that Davo understood Kurla's blush.

"Honor among cyborgs, huh?" he asked, his eyes dancing as he added a subtle thrust of his own.

"Yes, and considerable evidence that we are eminently trustworthy, loyal, courteous, honest, thoughtful and inhumanly incorruptible."

Davo roared with laughter until Kurla, pointing towards Prane's cabin, shushed him.

"Why? I want him up and about. It ought to be good for his soul to wake to the sound of my merry laughter."

"That sounds like a good entrance line," Prane remarked, throwing the door aside. He was smiling slightly, his shoulders erect and easy, his head high, all trace of fatigue and weakness erased. He hadn't had that much rest, Helva knew it, not after murmuring through plays half the night. But he even looked younger. "Shall we have at it, Davo?" he asked.

"You'll 'have at' nothing, Solar," Kurla retorted emphatically, "until you've eaten."

He meekly acquiesced.

In spite of her intention to remain aloof from the personality conflicts of this quartet, Helva watched the rehearsal with keen interest. A script was thrust in Kurla's hands and she was made the prompter.

"Now," Prane began crisply, "we have been given no inkling of Corviki attitude towards personal combat, if they have one. We don't know if they can appreciate the archaic code which made this particular duel inevitable. Interpreting our social structures, our ancient moralities, however, is not the function of this troupe. According to the Survey captain, the Corviki were entranced with the concept of special 'formulae'—the crew had been watching 'Othello'—intended purely to *waste* energy in search of excitation and recombination with no mass objective." He gave an embarrassed laugh. "There always has been an element of the population that ranks play-acting as a waste of energy. However, there is

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no point in our trying to play Shakespeare as a social commentary. We shall be classicists—pure Shakespeare as the Globe troupe would have played it."

"For purity, then, Juliet ought to be a pre-adolescent boy," Davo reminded him with wry malice.

"Not that pure, Davo," Prane laughed. "I'll keep the casting arrangements as they are, I believe. We shall have enough of a problem acting in free fall and getting used to the envelopes the Corviki will supply us. So, if we can get stage movement set in our minds now, we shall have only the problem of becoming accustomed to the new form when we reach Beta Corvi. I think of the exchange as merely another costume.

"Now Davo, as Tybalt, you enter down stage. Benvolio and Mercutio will be stage south and I, as Romeo, will approach from elliptical east."

Both men had worked in free fall, Helva noticed, for they modified all gestures skillfully yet managed to simulate the power of a thrust, the grace of a dancing retreat. Such movements, however, required great physical effort and both were shortly sweating as they floated through their measured duel again and again to set the routine in their minds.

They worked hard experimenting, changing, improving until they got through the duel scene twice without a flaw. Even allowing for his handicap, Helva was impressed by Prane.

Ansra drifted languidly into the main cabin and the atmosphere changed so abruptly that Helva inadvertently scanned her warnings system.

"Good morrow, good madam," Prane said jauntily. "Shall we have at the balcony scene, fair Juliet?"

"My dear Solar, you have obviously been hard at it with Davo. Are you feeling up to more?"

Prane hesitated a microsecond before he bowed and with a genuine smile replied: "You, as Juliet, are up, my dear," and he gestured to the area where she was to play the scene, above him.

He turned then, floating to the edge of the cabin and Ansra, her jibe ignored, shrugged and projected herself upward.

"Give me Benvolio's line, please," Prane asked Kurla.

Ansra's entrance had flustered the girl and she flipped nervously through the sides.

"Act II, scene i, Kurla," Davo murmured encouragingly.

Helva dropped her voice to a tenor register:

" 'Go then; for 'tis in vain
To seek him here that means
not to be found.' "

"Who was that?" cried Prane, whirling in such surprised reaction that he drifted towards the wall, absently holding himself off with one hand.

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"Me," Helva said meekly in her proper voice.

"Can you change voices at will, woman?"

"Well, it's only a question of projection, you know. And since my voice is reproduced through audio units, I can select the one proper for the voice register required."

The effect of her ability on Prane, Helva noticed, was nothing to its effect on Ansra.

"How could you see to read the line?" Prane demanded, gesturing towards the script in Kurla's hands.

"I've been scanning the text from the library banks." Helva forebore to tell the long story of the childhood years during which she had been hooked on ancient movies, leading somehow naturally to Shakespeare and opera, both light and grand. Her only hobby —and it was her own memory she was scanning.

Prane imprudently flung out both arms and had to correct against the ceiling.

"What incredible luck. Can you, would you read something else?"

"What? Auditioning a ship, Prane?" Ansra cried, her voice richly intimating that he'd gone mad.

"If I'm not wrong," Davo put in, his eyes glinting sardonically, "Helva here is also known as the ship who sings. Surely you saw the tri-cast on her some years back, Ansra? In fact I know you did. We were playing the Greeks in Draconis at the time."

"If you please, Davo," Prane-the-director interrupted, gliding over to Helva's central column. "You are the ship who sings?"

"Yes."

"Would you be kind enough to indulge me by reading the Nurse's speech, Act I, scene iii, where Lady Capulet and the Nurse discuss Juliet's marriage. Begin 'Even or odd of all days in the year'—"

"The nurse is to be played as an earthy type?"

"Yes, indeed, blissfully unregenerate. Her lines are a triumph of characterization, you know: only she can speak the ones the playwright gave her. That is, of course, the test of true characterization."

"I thought this was a rehearsal of my scene, not a lecture," Ansra remarked acidly.

Prane silenced her with a peremptory gesture. "The cue is," and he altered his voice to a husky, ageing contralto, " 'A fortnight and odd days'—"

Helva resigned herself to an active part in this incident and responded as Nurse Angelica.

Helva called a halt to what promised to be a round-the-chrono affair, on the spurious grounds of some critical computation. What had turned critical was Ansra's temper.

Davo and Kurla had willingly

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read additional parts: Davo with an insight to the minor characters that wrung mute respect from Helva and generous thanks from Prane. Kurla rose to the challenge of Lady Montague. Ansra's Juliet became less and less convincing. She was "reading," not acting, certainly not reacting to the passion, the youthful enthusiasm and tender passion of Prane's Romeo. She was wooden. The voice was youthful, the gestures girlish, but she resisted every effort of Prane's to draw out of her that quality he wanted Juliet to project.

None of this was obvious from the even tone of his courteous suggestions but it was most apparent to the others. And to Helva, Ansra's behavior was doubly inexcusable.

Once Helva had withdrawn, Kurla announced that it was time to eat a hot decent meal. She then insisted that they all get some sleep. Helva watched surreptitiously as Kurla ran a quick medical check on Prane. She, too, was amazed that the Solar was in remarkably strong vigor after such an intense and long rehearsal.

"You've got to rest, Solar Prane. I don't care what the recorder says. You can't put forth the energy you did today without replenishing it in sleep," Kurla said firmly. "*I'm* tired! And *you've* another planetfall to make."

He made a boyish grimace but lay back on the shock mattress, his eyes closed, one hand on his chest.

Tenderly Kurla covered his long, lax body. She turned abruptly and let her motion carry her quickly from the cabin. Prane's eyes flew open and the look in his eyes was almost more than Helva could morally observe. So Kurla was indeed the sun of Prane's regard and Ansra, the envious moon, already sick and pale with grief.

Helva was overwhelmingly relieved that she'd be out of this affair in a scant day's time. And yet, Ansra had been indiscreet enough to hint at action more vengeful than envious. Would the fact that she now knew Helva was no automaton inhibit her plans?

The passengers began to sleep. All, that is, except Prane. He began Richard III, with Gloucester's "Now is the winter of our discontent" to Richmond's "Peace lives again: That she may long live here, God say amen!" Considering the day's proceedings Helva thought that choice of sleep-conjuring all too appropriate. If mindtrap produced such perfect recall—

Sometime towards dawn of that day, Helva remembered a detail, and berating herself for incredible obtuseness, contacted Regulus on the tight beam.

"Good to hear your voice, Helva," Central Com responded with marked affability.

"I distrust such geniality from you. What is being cooked up for

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me? Not another brawnless assignment—because I'll refuse it. I've got rights and I'll invoke 'em."

"My, we're touchy. How can you be so suspicious? And so crass?"

"So you'll know exactly how I stand. Now listen to me, is there a free accommodation, no, make it a suite . . . on the Orbital Station in the free fall section?"

"I'll check, but why?"

"Check and answer."

"Aye-firmative."

"Great. I request that it be assigned Solar Prane and such of his company as accept. We've been running in free fall, in preparation for their assignment and they ought not to have to readjust to full grav."

"Good suggestion. But doesn't such an assignment tempt you, Helva?"

"Don't use that wheedling tone with me, Central."

"When you obviously have taken their welfare to heart enough to request orbital accommodations for Solar Prane?"

Helva caught herself. She mustn't sound so concerned.

"I was raised to be considerate. Just seems a shame to set back the progress they've made in free fall adjustment."

"No problem, Helva. This Beta Corvi mission has topmost priority."

"Say, I'm curious about this psyche transfer bit—"

"Hold it, gal. Ask me no questions since you've made it so plain where you stand."

"O.K., I'll stand off but I think it's petty of you," and she closed the tight beam.

Until her passengers awoke, Helva pondered Central's comments. They wanted her for this: well, they could beg, blandish and bribe but she was resolved to resist all bait until she was partnered.

She did not bother to inform any of her passengers of her sub-light arrangements with Central but connected with the proper hatch at the Orbital Station as if this had been her programmed destination. Regulus IV swam beneath them, brilliant in the reflection of its primary.

"We were told we'd be landing at Regulus Base," Ansra protested as she looked into the lock of the Station. She glared threateningly at the startled lock attendant, drifting mid-portal.

"Free fall?" Davo exclaimed. "I'd rather stay here."

"This is ridiculous," Ansra went on, directing herself to the confused attendant. "I demand to be taken to the Base. I demand to see the official in charge of this assignment."

"The XH-834 is scheduled to land at Base as soon as she has discharged her passengers here, Miss Colmer," the man stammered placatingly.

"If you will move into the main

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cabin, Miss Colmer, I can close the locks now," Helva said for Prane and Kurla had pushed into the Station lock.

Ducking around Ansra, the attendant sent the luggage, piled in the lock, spinning stationward. As soon as he was clear, Helva closed her outer portal. Ansra was forced to step inside.

"Just wait til I report you, you . . . you—"

"Thing? Informer? Abomination? Fink?" Helva tendered helpfully.

"I'll have you decommissioned, you tin-plated bitch!"

Just then Helva applied thrust sufficient to send Ansra, accustomed to free fall, reeling backwards into the nearby couch. And kept her there, cursing steadily and viciously, all through reentry and touchdown.

"You'll regret that insolence, too, you bodiless Bernhardt," was Ansra's parting taunt as she staggered to the passenger life.

"Sorry you had trouble enduring standard reentry maneuvers, Miss Colmer. You were advised to remain on the Station," Helva boomed on her exterior speaker for the benefit of the vehicle waiting to take the woman the short distance to the Main Administration Complex where Helva had landed.

"Hey, Helva, what did you do to that Colmer creature?" Central Com asked her on the private beam a little while later. "If you weren't in good odor with the Powers-that-preside, you'd be in for an official reprimand and a fine. She's got some good friends in high places, you know."

"So that's how she got this assignment."

"Hey, gal, I'm on your side but that kind of remark—"

"If I wanted to be nasty, I'd play back some of the honest-to-goodness, unexpurgated, uncensored deathless moments of my most recent trip through the vacuum of outer space."

"Like, for instance?"

"I said, if I *wanted* to be nasty." She cut the contact and looked around for more sympathetic company.

Crowding the Administration landing acres were no less than twenty brain ships. A veritable convention? Old home week? She spotted Amon, right up in the front row with five of her own class. When she tried to signal the VL-830, she couldn't get through. In fact, she couldn't get a line in to any of her peers: the ship-to-ship frequencies were overloaded.

Was everyone aspiring to that damned Beta Corvi assignment? She ought to warn 'em off. She called the traffic tower to ask for another landing slot, preferably nearer the brawn barracks. There must be other ships on the twenty kilometer square base interested in chatting with her.

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"So nice to hear from you," Cen Com cut in over Traffic Control. "Orders are for you to stay put, loudmouth."

"Can I at least have some company? From the brawn barracks? Remember? I was promised a brawn *this* time. And this time I'd better get one. If you knew what this poor lone female, totally unprotected from—"

"I *can* promise you company," Cen Com grudgingly admitted and cut off.

Helva waited, her circuits open, her passenger lift invitingly grounded. And waited. She was beginning to experience justifiable irritation when she received a boarding request. Activating the lift eagerly, she was disappointed to scan only one figure gliding up to her lock.

"You're not a brawn."

"Thanks, pal," the wiry small man said in an all too familiar voice.

"You're—"

"Niall Parollan, of Regulus, your coordinating communications officer, Planet Grade, Section Supervisor, Central Worlds BB Ship Division."

"You've got your nerve."

He grinned amiably at her, not the least bit intimidated by her booming. "You've enough for four of me, dear." He used the manual switch to close the lock and sauntered over to the couch that faced her column. His uniform was regulation but it had been tailored to fit his short, well-proportioned body: the boots he wore were Mizar gray lizard and molded the calf of his leg.

"Make yourself at home."

"I intend to. Feel I ought to get to know you better now I'm your supervisor."

"Why?"

He gave her a wicked stare and smiled, showing very white even teeth.

"I wanted to see just why such a storm is raging over the possession of one Helva, the XH-834."

"Among brawns?" She was gratified.

"You sound hungry. Need your nutrients checked?"

"I don't trust you, Parollan," Helva announced after a pause. "There is nothing to see . . . of Helva."

"Now, there's where you're wrong, girl," and he rubbed one short-fingered, broad-palmed hand across his mouth and chin. "Yes, there is something about you—"

"I had a new spray job at Nekkar."[1]

"I know. I checked accounting."

"The ingrates. Thought I got that free." Then, as he chuckled at her surprise, she added, "If you've been checking my standing, you know I'm well able to afford any penalties for refusing assignment."

"Oh ho, you bite, too," crowed Niall, rocking back and forth in

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an excess of delight. "Don't fool you, do I?"

"Not for a microsecond. I want a brawn, Parollan, not a snippy, little mouthpiece like you."

He roared with delight.

"Now I see why." Then suddenly he was completely serious. He leaned forward, his eyes on her panel in an attitude so familiar it gave her a frightful wrench. Then he was talking and she listened.

"Item: the Beta Corvi assignment will require an unusual exercise of diplomacy on the part of both partners as brain and brawn will be in direct contact with the Corviki throughout the mission. The shell person has the additional responsibility of direct and discretionary control over the Corviki psyche transfer mechanisms: a control which will necessitate the use of an additional synapse connection."

Helva whistled. At the least, it meant opening the titanium column, a difficult experience for any shell person: at the worst, actual penetration of the shell which would be traumatic to most.

"Ships of the two most recent classes would require no shell-penetration. They were already fitted with supplemental leads, placed in the cerebral areas required by this connection, in case future modifications might be needed."

"That would leave Amon out," Helva mused.

"He's out anyhow," Niall affirmed. "He never heard of Shakespeare and his brawn couldn't act his way out of a saloon brawl."

"The brawn has to act, too? Well, that obviously lets me out as I have no brawn at the moment, do I?"

"God spare me your tongue when you're really mad. Actually Chadress Turo has been called back on active duty . . ."

"Another temporary? No, absolutely not."

"For this assignment, some ships would change brawns in a flash. Blast it all, Helva," Parollan shouted, "don't be such an ass. Listen to me. You've never before been stubborn for the wrong reasons."

Helva digested that unpalatable charge in silence.

"I'll listen."

"That's more like my Helva."

"I'm not *your* Helva."

"You sound like Ansra Colmer."

Helva sputtered indignantly.

"You do, throwing your weight around—" Niall insisted.

"She hasn't been trying to scratch Solar Prane from the mission, has she? Because if she has—"

"She's got very influential backing," Niall agreed but something in his attitude, a certain tenseness, a sly gleam in his eye warned Helva.

She chuckled softly, watching the effect on him. He reacted.

"I thought so," she laughed

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aloud. "Her backing won't mean anything if the probability curve still favors Prane. And nothing's occurred to change that, has it?"

"Trust actors to blab all over the place," Niall growled, his features screwed up into a sour expression. "You must have stayed up all night listening to their nightmares."

"I told you there had been some real interesting lifelike dramatic interludes. Let me know if she leans too hard on Prane."

Niall's head shot up, his face cleared of disappointment.

"Look, Helva, can't you see how valuable you'd be? You're on to Ansra. Do you realize she's gone from ship to ship, sounding out brains and brawn? That *she's* recommending the properly sympathetic partnership to Chief Railly which will aid and abet the success of the mission?"

"Wouldn't put it past her. If I were you, I'd get Davo Fillanaser to cite the jeopardy clause on her. She means to upstage Romeo."

"*I* know it!" Niall exploded from the couch, pacing the cabin. "And you know it. But she does have pull and the probability profile still favors her as Juliet. We can't shake it. We *need* you!"

Pointedly, Helva said nothing.

"Prane asked if you were available."

"Is this an official notice of mission, Supervisor?"

"It carries a triple bonus, Helva." He was not capitulating.

"I wouldn't care if it carried a free maintenance ticket for my operable lifetime, Parollan. I know my rights. Is this an official notice of mission?"

"You stubborn jackass of a titanium-coated virgin!" shouted Parollan. He turned on his heel and pounded out of the cabin, slapped up the lock release and jammed down the lift control, descending without another look in her direction.

Helva glared at him, infuriated to the core by his compound insults, arrogant manners, twisted arguments, veiled blackmail and outright bribery. How he had ever got to be a supervisor, she didn't know but she had her rights and one of them was to choose her directing personnel and—

Someone was requesting permission to board.

"If you've come to apologize, Niall Parollan—"

"Apologize? Are we late or something? They just now gave us the A-O," a baritone voice shouted into her audios.

She paused long enough to distinguish half a dozen chattering voices.

"Who wants to board?" she demanded.

"She sounds mad about something," said a horse whisperer.

"We're from brawn barracks and we'd very much like to . . . to—"

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"Court her, that's the term, brass-head," prompted the hoarse whisperer.

"Permission granted," Helva said, trying not to sound as sour as she unaccountably felt.

Seven people crowded onto the lift, five men and two women, arguing and hollering about bruised feet and ribs all the way up. Helva could feel the strain on the lift mechanism, then bodies exploded into the lock as if in free fall, all scrambling to be the first to salute her. Helva stared down at the handsome, grinning faces; strong, tall people all eager to please her, to court her, to be her brawn.

Others arrived as the news circulated that the XH-834 was being courted. In fact, Helva sent the lift back down as soon as the newest arrival stepped into the lock. So it wasn't surprising that Kurla Ster could step into the lock without advance notice.

"Hey, don't gawk, girl. Come on in and take your chances with the rest of us," someone encouraged her.

"She's not competition, brawns," Helva sang out. "Let her through to the pilot's cabin."

Kurla raised one hand as if to protest, her face reflecting confusion and embarrassment. Before she could verbalize, she was pushed through the crowd and into the cabin.

"Nothing's happened to the Solar, Kurla?" Helva asked, the moment the door shut on the noise.

Relief washed away the uncertainty as Kurla cried, "You *do* care about him."

"I respect Solar Prane as an artist and as a human being," Helva replied, choosing her words carefully, wondering if Parollan were behind this visit.

"Then why did you refuse the assignment when he specifically asked for you?" There was a shrill note to the girl's voice although she was trying hard to speak evenly.

"I have not refused the assignment."

Kurla's lips tightened angrily. "Then Ansra Colmer *has* been able to keep your name off."

"I don't know anything about that, Kurla. I have been approached . . . unofficially . . . and I was very flattered that Solar Prane asked for me. But I have also made it plain . . . unofficially . . . that I do not want another assignment with a temporary brawn."

"I don't understand. I thought it was interference from Colmer. That you didn't realize he wanted you. Don't you realize there's not another ship that even knows who Shakespeare was, much less quotes him on cue? And he thought you might even like to play the Nurse. He was honestly impressed with your reading on the way here. Why, you're so perfect, it's like an

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answer to an impossibility. And he's got to have the very best there is. It's got to be perfect—" she fought to control her voice. "It's just got to be perfect."

"Because it's the end for him?"

Kurla seemed to crumple in on herself and sagged against the bulkhead, unbidden tears in her eyes.

"God spare me a woman's tears," Helva groaned, angry and annoyed. "So it's his swan song and you've decided that I'm the ship to sing it?"

"Please . . . if you've a gram of humanity in you—" Kurla covered her tactless mouth with both hands, her eyes wide.

"Actually, about twenty-two kilos of me is very human, Kurla—"

"Oh, Helva, I'm so sorry," she stammered. "I'm so sorry. I had no right to come here. I'm sorry. I thought if I could just explain—"

Awkwardly she got to her feet, her muscles straining.

"I'd appreciate it if you'd forget I came here," Kurla went on in a very stiff, formal voice, fumbling for the door release. "It is always a mistake to act on impulse."

"Is it true that not one of the others know Shakespeare?"

"*I* wouldn't demean myself with lies."

"So Ansra is making it very difficult."

The pride seemed to drain out of Kurla and she leaned her head wearily against the door for a moment, defeat showing in every curve of her slender body.

"She implies the most despicable things about him. She's said . . . never mind. But she is undermining him with the rest of the cast. And . . . and Helva, I don't trust her."

"Then have her replaced, you little idiot."

"Me? What could *I* do? I'm a medical attendant."

"Kurla, the man's dying. You can't be deluding yourself about that—"

"No. Thats' the one delusion I don't have." Something seemed to pull the girl erect then. "I just don't want him cheated out of this last perfect performance. His acting is all he has left and he's so good at it."

"You've influence with him, though. Get him to replace Ansra."

Kurla shook her head sadly. "He won't because he believes that she's the best Juliet available so he'll put up with her . . . temperament. And"—Kurla hesitated, the struggle with honesty apparent in her expressive face— "She was, when they rehearsed back at Duhr. Then . . . she changed. Overnight. Prane won't do anything. And she'll destroy him, Helva. I know it. Somehow she'll destroy him."

"Not while I've got my eye on her, she won't," Helva replied firmly.

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The speed with which Chadress Turo arrived afterward struck Helva as suspicious but she knew Kurla's visit had not been planned by Parollan. And she liked Chadress. He could not have been retired very long for his step was springy and an old, unaltered shipsuit outlined a strong, muscular body. He wore a clutch of achievement stars but no honors, which meant he had plenty but was no braggart.

"Welcome aboard, Chadress Turo of Marak. It's nice to have a partner, however briefly."

Chadress caught the caustic undertone. "Hope I'm not the cause of your regrets?"

"No. You're the first happy face I've seen in the last two hours."

His eyes twinkled. "You've been put into coventry by the brains and I had to be smuggled aboard to avoid outraged brawns. Oh, they'll all forget their pique. They always do. However, officially, you're in very good odor. Supervisor Parollan is taking personal credit for convincing you to accept—"

"The nerve of the pipsqueak—"

"I thought so," laughed Chadress. "Well, no matter. I'm not the only one who thought you'd be the only ship to do the job right and I've only rumors . . . and legends . . . to go by. But it's going to be a tricky mission with so much at stake, and so many explosive—"

"Personalities?"

"Yes." Chadress laughed. "I've met many actors—I'm a classic buff myself, that's why I was called back . . ." he paused, his eyes seeing a middle distance, a slight frown on his face. "In fact, I leaped at the opportunity. Some of us should be allowed to die in harness. No matter. Here's the mission tape," and he dropped it in the slot. Before he touched the playback switch, he closed the lock and turned off all the console audio. Then he eased into the pilot's chair and settled himself to listen.

Helva was amazed at how much of the tape's information she knew. The Nekkarese com man had had most of it correct.

A Survey ship on a routine mission had intercepted pulsed energy emissions of tremendous power near Beta Corvi. They tracked the emissions to the sixth planet, a methane-ammonia giant, and assumed an orbit. Before they could prepare probes for exploration in such a corrosive atmosphere, they were contacted by the Corviki.

" 'It felt like pressure, as if a giant hand were covering my head and pressing knowledge into my brain,' " was the taped comment of the Survey ship's captain.

The unusual form of communication was nevertheless precise enough for the Corviki to grasp the nature of their unexpected visitors and to discover a commodity which they, unimaginably sophisticated scientifically, wanted.

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" 'I guess the best analogy,' the captain of the ship went on, 'is that of the pure researcher who has devoted half a century to an intensive study of some esoteric subject. He masters it and finally has time to look around him and discovers that other things exist . . . like girls,' the captain snickered, 'and sex. He understands the theory but not the application, and he sure wants to learn.' "

"Romeo And Juliet" was a sample of the merchandise which had aroused the Corviki curiosity. If acceptable, the human company would teach understudies the full play, with movement adapted for the free fall condition of Beta Corvi. Payment would be the Corviki process of stabilizing certain isotopes in the transuranian group whose power potential was unrealizable due to an exceedingly short half-life. Central Worlds badly needed such a process and the XH-834 was to ensure the success of this dramatic mission.

"Well, we'll give it the old homeworld try," Helva said.

"You don't sound so sure."

"It sounds all too simple. For instance, this psyche transfer: how do we know it won't develop some unexpected snag and leave our people trapped down there in Corviki envelopes?"

"That's one reason we're equipping you with an override and a time control."

"Suppose the Corviki override me because they adore Colmer's Juliet?"

Chadress grinned at the notion, but threw the schematic picture of the transceiver circuitry onto the pilot's console. "Every EEG expert in the galaxy has had a go at these. There are no extraneous circuits, nothing that is not accounted for in the schematics. Furthermore, *we* manufactured them, not the Corviki. Now, they do specify that seven hours is the endurance limit for our life form."

"Ahah!"

"Cool it. The transceiver has a time control, set for the maximum of seven hours, our time, so nothing could happen."

"After the maximum period, what happens to the personality if—"

"Don't invent problems. We've got enough. However, I did speak to the Survey ship's captain and he was most encouraging about the transfer. In fact, he said it was perfect for a bunch of actors. You *think* that you want to be on the surface of the planet. And you are! No pain, no strain. Simplicity itself."

"Simplicity has a habit of expanding into catastrophe!"

Chadress called her a pessimist and went on with the briefing. She thought of half a dozen or more factors that could alter disastrously betwixt here and Beta Corvi, not to mention ringing, in an unknown device.

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The adjustment to be attached to herself was even simpler. Even ingenious, she admitted, examining the compact device under microscopic lenses. It would link several infinitesimal strands already embedded in her cerebrum: one which extended deep in the area controlling the optic nerves for the psyche transfer was triggered by this portion of the human brain. The other two were to link cross-over reflexes that would enable her to time and to disconnect the psyche relay for the rest of the mobiles. All three synapse attachments were self-activating and did not appear on the pilot's board.

The hook-up had to be made with Helva under anesthesia and she disliked that part intensely. It was unnerving for her to hear the chief of Regulus Base—no less—mouth the pitched syllables that triggered the panel which was the only access to her shell behind the titanium column. It seemed she hovered in an eternity of vulnerability before he touched the anesthesia release. She instinctively struggled against unconsciousness. Was that how poor 732 had felt? Or had her madness banished fear?

Helva's thought was no sooner formulated than she was conscious again. Startled, she gazed out into an empty cabin, irritated that Chief Railly dared leave her unprotected. Then she was aware that considerable time had elapsed since the chief had spoken. Eighteen hours, twenty minutes and thirty-two seconds, to be precise.

"Awake again, Helva?" and Chadress stepped into her lock. "I say, they certainly timed it to the exact second. I'm to ask if you've a headache?"

"Headache? How could I? I've no pain reflexes." Then she looked around her main cabin, where transceivers had been stowed by her couches, and wall units had been added to accommodate the additional personnel. Bunks had been added to all her cabins and another table fitted into the pilot's cabin.

"I'm a ruddy troop ship."

"Indeed you are," Chadress agreed, "and the troupe is assembling."

Five men ascended in the lift and were introduced by Chadress but she found it easier to think of them as the parts they would play. The introductions were cut short by sirens and the advent of a fleet of ground vehicles.

"Ansra's made the scene," the man who played Prince Escalus announced in a dry voice.

No one seemed sorry when Chadress refused any boarders, including Chief Railly. As he took the restriction in good part, the others had to and Ansra was reduced to waving and smiling at her admirers as she was lifted smoothly lockward.

"Here I am again, Helva," she

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said in a bright glad way that certainly didn't deceive Helva.

"Welcome aboard, Miss Colmer." *You feed me the cue,* Helva thought to herself, *and I'll read the appropriate line.*

Immediately Central Com, and it wasn't Niall Parollan's voice, gave her clearance for the Orbital Station. The shuttle run was fast and in no time Helva was at the' free fall lock.

The scene was reminiscent of the Duhr landing: Davo, Solar Prane and Kurla the central figures of a smiling cluster. But here, the whole cluster entered, all of them floating with excellent control into the cabin, pushing down to the couches and securing themselves for maneuver and acceleration. There was neither wasted time nor motion.

Prane looked so gay and alert that Helva glanced at Kurla whose attitude would transmit a truer reflection of her patient's health. The girl was radiant, her eyes as bright as Prane's, her manner proud and confident. She managed a polite nod to Ansra, who smiled fixedly at everyone.

By contrast, Davo looked tired and thoughtful. He pushed immediately towards the sleeping accommodations and meshed himself into a bunk.

Prane hovered in front of Helva. "I want to thank you, very much, for putting aside your personal preferences to undertake this venture. Chief Railly has assured me that you will have the topmost priority when you return."

Helva did not have time to analyze why his words disturbed her for the Orbital Station transmitted good luck and clearance. Chadress did the manual piloting—that was protocol—but Helva was so used to doing things herself it was hard to watch. Not that he was inept. *Damn, damn, damn,* she thought, glancing around the crowded cabin, wishing half her mind were busy on something routine, *how had she let herself get talked into this?*

The moment Chadress announced turnover and free fall, Prane called a rehearsal. First he put the five men who had joined the ship planetside through the staging they had missed. They'd all worked in free fall and they knew their roles. All they required was time to familiarize themselves with movements and the Nurse's voice issuing from the wall. Ansra, however, chose to be difficult about that. She undulated toward the director—whether to charm him or intimidate him was a question.

"Really, Prane, I can project any emotion required of any capable actress, but to pretend an . . . abstract voice is Juliet's Nurse is the end. How can I play to a wall? And, how may I ask, can . . . Helva"—it seemed to be difficult for Ansra to name her—"acquire any ease in free fall, when I under-

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stand she has never made any use of a body?"

"My stage directions are perfectly clear and are printed in my circuitry. Therefore I cannot make a mistake. That is, as long as you are where Juliet is supposed to be," Helva answered.

No one actually laughed aloud at the put-down. Ansra resumed her proper position, frowning, and chewing her lip.

However, her claim that she could project any emotion required of any capable actress seemed to fall short of the mark in scenes with proper actors. Her Juliet remained wooden and inadequate. She did not take fire from Romeo's speeches although how she could fail was beyond Helva's comprehension. The man was inspired—and inspiring.

Relieved now for many days of the press of gravity on his spongy bones, buoyed constantly by the success of every other aspect of this singular production, Prane exuded a vitality, an enthusiasm that was contagious.

As he was setting scene iv of Act I, with himself, Mercutio, Benvolio and others doubling up as maskers and torchbearers, Mercutio finished his speech:

" ' . . . Come, we burn daylight, ho!' "

The scene had been quick, bright exchanges, the lighthearted nonsense of friends bound for a gay evening

Mercutio repeated his line. Hastily, Helva remembered she doubled as prompter and found the place.

" 'Nay, that's not so,' " she read.

Silence met this attempt so she, too, repeated the line.

"We know the line," Prane said as this additional pause lengthened conspicuously. "Who says it?"

Helva gulped. "You do."

For a moment a terrible expression haunted his eyes. Then he burst out laughing and the terror was gone. " 'Tis always the littlest line that escapes," and he briskly cued Mercutio.

That night, as everyone slept, Prane was restless. Shamelessly, Helva turned up the volume in the cabin he shared with five other men. He was repeating scene four over and over. Then he lay silent. Helva thought he slept until she saw his right hand slowly creep to his belt, carefully extract a small pill from the waistband fabric of his shipsuit. With a gesture counterfeiting a random sleepy movement, the pill reached his mouth.

The secretiveness of his action, added to the intense rehearsal of that scene, gave Helva a tragic insight to the Solar. He *was* an addict, in the most horrifying degree: mindtrap, listed as harmless in the galactic pharmacopoeia, had become poisonous to him, fatal to mind and body. And he knew it. Yet more devastating to Solar Prane was loss of memory and to

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prevent that, he courted self-destruction.

Except for Ansra, rehearsals proceeded well. How Prane kept his temper with such deliberate obstructionism, Helva did not know. Every scene the Solara played began to sag, lose fire, drop pace. But Prane did not react. And Ansra apparently gave up trying to goad him into an action no one could condone. She took to needling Kurla, a far more vulnerable personality.

Fortunately, Nia Tubb, the Lady Capulet, shared the pilot's cabin which was the women's room. She was wise in the ways of human relations and if she said nothing to the point, she did buffer Kurla from Ansra's hostility. She also helped Kurla in her lines, kept up a lighthearted monologue when the women were alone. But even she could see Ansra's tactics increasing the pressure on the sensitive, anxious medical attendant.

"Honey, you have any *real* trouble with Colmer, you let me help, huh?" Nia Tubb murmured to Kurla one morning.

"Thanks," Kurla answered with a wan smile.

"Say, just between the two of us, Prane's no addict, is he? He doesn't look like one and I've seen enough to know, but still—"

"Solar Prane developed an adverse chemical reaction to long use of mindtrap."

"I always thought mindtrap was the most harmless thing in the world. I've used it myself times without number."

"Ordinarily. But the Solar has been using it for over seventy years. A residue of the silicon content, which ought to have been flushed out of his system, has built up in his tissues. He also has a liquid retention problem and the diuretic originally prescribed combined unfavorably with the mindtrap residue, leaching potassium from his system in an unremediable process."

"What does that mean?"

Kurla's voice, dispassionately clinical, was more tragic than tears.

"In low grav conditions, in free fall particularly, there is no strain on the skeleton and he's fine. But his bones are soft: a fall, a blow, any long period of heavy physical strain and he would . . . in effect . . . break up. And the silicon is gradually choking his vital organs to death."

"Replace 'em!"

Kurla shook her head. Nia patted her hand sympathetically. Helva interrupted them with a rehearsal call. And that was the worst one yet. Ansra's attitude had insidiously undermined the entire cast. Everyone was off; they blew their lines, forgot stage business. When Mercutio and Paris got into a fight that was not in the script, Prane called a halt.

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"We've gone stale. We'll take today off and tomorrow. Helva, break out the liquor rations. Nia and Kurla, would you be kind enough to see what surprises the galley might serve us? Helva, have you some tri-casts of interest? We need to relate to the everyday world that we have forgotten, immersed as we have been in ancient England."

Ansra stalked out of the main cabin, slamming the door to the women's quarters. Helva looked in to find her staring angrily into a mirror. It was disconcerting for Helva to watch her frustrated, brooding self-examination while Nia and Kurla chattered inconsequentialities in the galley.

Helva tried to be everywhere, keeping an ear out for any trouble —any more trouble, that is. Davo floated purposefully towards Prane. Since Helva had begun speaking only from the main cabin, she fostered the tendency for her passengers to forget she had ears and eyes everywhere in the ship.

"You must realize by now, Prane," Davo was saying, "that Ansra is determined to ruin this production. And she is succeeding admirably."

Prane regarded his friend for a long moment, a slow smile beginning. "You've a solution?"

"Let's put her off balance. Remember what we used to do on the long hauls on tour?"

"Reshuffle all the parts?"

"Exactly. We all know each other's lines and movements."

Prane began to grin mischievously. "And . . . let Helva be Juliet?"

"No, Kurla is Juliet!" Davo returned Prane's surprised stare with a dead serious dare.

"And Romeo?"

"That part need not change," Davo said evenly, then added in a light voice, "but I shall be Friar Lawrence and marry you two."

Prane waited til everyone had eaten and was relaxed with Thracian beer. The announcement met with approval, raucous and bawdy.

"I'll be Lady Capulet," Escalus announced in a squeaky falsetto.

"And I'll be Lady Montague," said Friar Lawrence in a quavering contralto, reverting to his own normal bass to add, "always thought she was a wino."

"I'll be Escalus," Helva volunteered in a voice so like the real actor's, the man dropped his tankard.

"You could be the whole damned play all by yourself," Davo vowed, his voice far more slurred than he should be on Thracian beer. "There isn't one part *you* couldn't do."

"Really? In that case, I'll be the Nurse," Ansra Colmer announced. "Then Helva can see how the part should be *played.*"

"And Kurla will be Juliet," Davo cried, his eyes on Ansra. "Set the

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stage, oh chorus. Places, everyone. Places."

" 'Two households, both alike in dignity . . .' " Helva began promptly in a basso, sweeping everyone into the act before they had time for second thoughts.

Davo came on as Sampson, and Chadress, normally Lord Capulet, as Gregory, hamming their lines and indulging in slapstick nonsense. Baltazar rolled on, as though drunk, slurring through the establishment of conflict between the two houses. Lines were rattled off, and actors bodily moved each other into proper stage position or deliberately upstaged the speaker.

When Escalus-Lady Capulet glided on with Nurse Angelica, Ansra, with deliberate malice, dispensed with fun and *played* her part as she had not played Juliet. And somehow twisted her lines as Nurse to mean something entirely different. Her exit line: "Go girl, seek happy nights to happy days" was barbed enough to make Escalus falter.

But then Juliet met Romeo at the feast, and Ansra's spitefulness backfired. For Prane was a different, tenderer Romeo, his voice trembled not with fatigue but with newfound love, gentle, protective, eager. And Kurla, her eyes equally discovering her lover, was Juliet; breathless, shy, daring, and precious. She blushed shyly as she said,

" 'For saints have hands that pilgrims' hands do touch,
And palm to palm is holy palmers' kiss.' "

She turned her hands palms down on Romeo's as he had so often directed Ansra only to have her mistime the words and action as to make them meaningless.

Romeo raised Juliet's hands on his, and the ardor in his eyes, the answering joy in hers, made that little scene so tender that everyone was spellbound.

" 'Thus from my lips, by thine, my sin is purg'd'," said Romeo in so soft a voice it seemed a faint echo, but it hung clearly until his lips met Juliet's in a kiss that was as devout an avowal as a shout.

Her role forgotten completely, Ansra flung herself forward at the two still embraced and lost to their surroundings. And the proximity alarms twanged. They had arrived at their destination.

"Now," Chadress said to the actors, all seated in the main cabin, hastily cleared of all its party debris, "the transceivers were fitted to your head-sizes so they will be quite comfortable. You all heard the reports from those Survey ship members who used the first device. You know the transfer process is painless and easy. You think yourself on the surface and there you are."

"How can you think yourself on a surface you've never seen?" Nia demanded, grimacing at the transceiver she was holding.

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"The nearest analogue would be the undersea scapes on Terra in the Carribean area, or the water world in Aldebaran. Or Vega IV. Imagine yourselves surrounded by seaweeds, all shapes and colors. Yes, the Survey people repeatedly emphasized the enormous importance of color. The Corviki resemble a marine animal in the class hydrozoa, sort of a large sac-like body with a complex collection of tendrils that may be nerve endings."

"Gawd, what a costume!" Nia Tubb muttered, shuddering.

"It'll fit, I'm told," Chadress grinned at her. "Now, Helva is our fail-safe. She's equipped with an automatic return relay. We've been warned not to remain too long in the Corviki environment."

"Why?" Ansra demanded in a bored voice.

"The Corviki undoubtedly have good reason but they did not say what. Now, Prane?"

The Solar rose, looked around at the entire cast. "We all know the importance of this unlikely exchange of Shakespeare for power. The Bard has been translated into every conceivable language, alien and humanoid, and somehow the essence of his plays has been understood by the most exotic, the most barbaric, the most sophisticated. There is no reason to suppose that Will Shakespeare hasn't got something to say to the Corviki—if we do the job wholeheartedly—or whatever our Corviki envelopes use for that organ.

"Ladies and gentlemen, curtain!" He sat down and donned his transceiver, settling back in the couch and relaxing completely. In a few seconds a light glowed across the rim of the transceiver.

"If that's all there is to it," Nia Tubb said and pulled hers down on her head.

The others imitated her more or less simultaneously until only Chadress and Helva remained on board.

"Check Prane," Helva urged.

"He's all right as far as I can see. I'll see you down there, Helva."

And he was gone. Helva had the uncanny notion that the new synapse leads were burning hot. But that was impossible. She willed herself to ascend. On the heels of the thought that this was the first time *she* had been outside a shell in her life, came a terrifying surge of primitive fear and then—

Transfer!

Her first indication of the difference involved pressure—an enveloping pressure. But the Corviki had said they would provide empty envelopes for the cast to occupy. She was enveloped and the envelope was also enveloped. She could "feel" it all around. She undulated experimentally, hoping to rid herself of this sense of being covered. It was somehow unclean to feel all along every part of her. And yet, even as she felt loose, she was at the same time compressed. Not

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gravity pressure, but something *in* which she was and was moving. Well, movement was not a new skill for her: this was, then, just a form of motion.

She wriggled again and things that were part of "her" floated up from beneath her. She could not look at them because they floated away when she tried. Hm-m-m. She could see every part of her ship-self from one scanner or another. How limiting mobility was. Well, she'd look around as far as she was able. And stared down, down, down in an unlimited perspective until finally her sight distinguished a burbling, burping mass of ochre eruptions that she recognized as "ground."

Above and around her fronds swayed, exhaled and inhaled in a full spectrum of colors unbelievably varied and varying: colors which in some cases had "sound" and "smell" as part of their value. Only "smell" was also a novel sensation to Helva, who had utilized gauges all her life instead of the olfactory sense.

"Adapting, Helva?" a familiar presence dominated her mind. Instinctively she turned towards the "sound" which wasn't sound as she had previously known it but a patterned interruption of the pressures around her.

"It's odd to feel physical sensations," she replied.

"It would be, for you."

"How do you feel, Chadress?" for the presence was indisputably her brawn.

"Velvet, soft, deep, a very pleasurable tactile sensation, I assure you. And a sense of unlimited power," Chadress was impressed. "Of being young and new again." Here the dominant quality of his thought was incredulous and self-amused. "They have evidently lent us brand-new, guaranteed-unsullied shells."

"I wonder where they get them from."

A new dominance approached them and this entity was recognized by both as being a true Corviki. The presence was very dense and Chadress and Helva both received an undeniable feeling of great age and wisdom, of a unique application of basic energy.

"I am your Manager," he introduced himself. "The others are all contained. We may proceed with this expression of energy."

That which we call a rose by any other name would smell as sweet, thought Helva as they propelled themselves towards a sphere-shaped area, surrounded by unanchored lumps of a dead black substance, framed by enormous breathing fronds. And suddenly, she could recognize everyone, despite their apparently homogeneous shape, by the slight variation of color tone and pressure weight.

Prane came on as dense as Manager, Helva discovered. She

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began to equate density with age or wisdom. Subjectively she wondered how she "felt" to others. Then Prane called her as chorus to open the rehearsal.

For a frantic moment, she wondered how she could possibly project "chorus" without the audio equipment available on the ship. She had an intense desire to retreat back to her own shell again. But Prane was director and one obeyed the director.

" 'Two households, alike in dignity,' " and somehow her dominance enlarged, darkened, and she was more than herself.

Then Samson and Gregory emerged from behind fronds and their dominance was shallow, light, tenuous as if inconsequential. In a fashion the cast managed to condense or dissipate themselves through the scenes until by Act IV, the new medium and the difference of exposition was no longer strange.

It was almost physically painful to be wrenched by the time control back into the ship and discover that they were, sadly, only flesh and blood. No one said much. They ate a great deal quickly and then went to bed.

Helva, unfortunately, was wide awake and, for the first time in her conscious life, envied the others for the gentle oblivion of sleep. She tried not to think of the experiential effect of mobility on her conditioning. She disciplined herself by running a full scan outside. Not because anything might have changed but just to make sure all was as before. They were in orbit, black space topside, but the amorphous boiling cloud of diffuse colors, shot with brilliant lights, loomed below. She ran a check on her systems and discovered something a little unnerving in her engine compartment. There was something blocking her readings there, yet the systems were all green on the boards. She could not "feel" power although there was no evidence of its absence: it was simply unavailable to her. As she pondered the implications of this, she heard a faint susurrus of sound. She snatched at the diversion and traced it: Prane at his litany.

" 'If by your art, my dearest father, you have
Put the wild waters in this roar, allay them. . . .' "

She listened avidly until the sleepy voice trailed into silence after

" 'As you from crimes would pardon'd be.
Let your indulgence set me free'."

They picked up the staging the next "day" where they had left off. Helva had the feeling none of the Corviki had left the "stage" or were even aware that the group had been away. Did they control time as well as energy? Was time, as one Alpheccan theoretician maintained, merely another emission of energy?

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Her perceptions were more acute today. She had control over her envelope and the sensory data it constantly received. And while the others were beginning to act, Ansra was consciously damping down.

Manager approached Ansra, in front of all, just before time was up.

"There is no logical reason to withhold energy. Conservation is not the aim of this experiment. We are assessing the effects of this form of energy expulsion on the pressure-senses and dominance factors. You inhibit this experiment. Therefore, lose energy as the equative factors require."

"Or?"

A ripple of pressure and color answered Ansra's ultimatum.

"The envelope will be permanently emptied."

"I will not go back to that perverted seascape to be insulted and degraded in public," Ansra declared.

She was rather magnificent, Helva thought, even if she left her audience unmoved.

"That is sufficient, Ansra Colmer," Prane said quietly, rising from the couch, his voice glacial, his eyes stony, his attitude unbending. "You have made your personal preferences and private opinions known to each and every member of the cast. However there is more at stake than personal differences and everyone here has been exceedingly forebearing with your whimsies and little schemes. You *will* go back tomorrow and you will, as you were advised by the Manager, lose energy as the equative factors require."

"Who's going to make me?" Ansra struck a pose with that challenge.

"Any one of us, honey," Nia Tubb replied forestalling Chadress and Davo who began to rise from their seats. "Any one of us would be glad to make you. In fact, you might find when we got through with you here that it would be a relief to get into that Corviki envelope."

"You wouldn't dare!"

Helva wondered whether Ansra, having taken a stand, was too hard-headed to retreat, or unable to believe that one of her standing could be violable. Fortunately, she was also a person who could not tolerate physical pain and a half dozen open-handed blows from Nia were an effective proof and promise.

"Oh, no you don't, honey," Nia cried, grabbing Ansra's arm as the sobbing woman headed for the cabin. "You're not moving from my side—because I don't trust you out of my sight. Now you sit down and you'll eat and you'll behave. And tomorrow you'll be the best Juliet that's ever trod air."

That scene, on top of the psychological exhaustion of rehears-

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ing on Beta Corvi, drained everyone's reserve. Chadress and Kurla passed around liquor bulbs and a high protein soup. As soon as they ate, people drifted off to their bunks and meshed in.

"Keep Nia and Ansra under observation, Helva, will you?" Chadress suggested.

There's something different about him, Helva realized, a new depth, oddly Corvikian.

"Do you think she will play now?" Helva heard Kurla asking Prane. The two were the last awake, and seemed unable to separate.

"Her color was that of an anger-fear composite—" Prane stopped short, staring down at Kurla.

"You're thinking Corviki," she laughed, her eyes dancing. "It's contagious, isn't it? Like assuming the characteristics of the part you're playing? See, even a rank amateur like me picks up tricks of the trade!"

"You transfer into a very solid, warm presence on Corvi, my dear."

The laughter caught in her throat and her eyes were filled with a haunted yearning. They seemed to be a breath away from a kiss when Prane, a garbled sound issuing from his throat, whirled away down the corridor.

Ansra lost energy the next rehearsal with such good will they were able to run completely through the play. Prane was so pleased with the result he informed the Manager that they could give the first complete performance.

"My energy group is excited to experience the total pressure dominances of these envelopes," the Manager replied, emanating the lavender-purples Helva equated with pleasure in Corviki. "Your next entry here is convenient?"

Prane agreed heartily.

"If this emission is satisfactory," Chadress asked, shading his dominance with the sharply controlled waste of deference to a superior force, "will Corviki entities then undertake a transfer of our patterns so we may fulfill our contract with you?"

"Affirmative. For it is evident that there is a loss of ego-entity superior to the programmed minimum. Entropy could exceed basic energy requirements."

Helva felt she'd better analyze that statement the moment she returned to herself. It sounded . . . ominous . . . to Helva, but not to her imprinted self in the Corviki envelope. Such a split of personality could be very dangerous indeed.

Once back on the ship, it was easier to spot those who were psychologically twisting their orientation. They tended to express themselves in Corviki terms as Prane and Chadress had the night before. The only one who seemed impervious was Ansra, but then, Ansra was so wrapped up in her personal grievances, she had no energy—

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there I go, moaned Helva—for objective experiences.

Opening night on Beta Corviki was a white-hot, frenetic triumph as far as Corviki acceptance of this form of energy loss was concerned. Beyond the stand of fronds were masses of Corviki, pulsing, throbbing as they absorbed the cast's emission, to all appearances starved for this form of energy.

Helva could feel her Corviki envelope swell to incredible dimension as the feedback resulted in a thermal reaction, giving her an unlimited mass to energize to a high excitation level. Yet she was also aware that the Corviki audience understood the conflict of the two warring energy-groups, of the desire of the two new, but not shallow, entities, to combine into a new force group, of the energy-stoking of herself as the Nurse, of the brilliant light of beta particles exchanged by the two new entities, swearing neuron coalitions and finally, forced to expend the vital energy of their very cores to bring the warring groups to the realization that co-existence was possible on their energy level.

As the Prince summed up the entropy death of the two, novas of approval exploded outside the fronded area. And Helva, gross with feedback, found herself racing to emit into the nearest drained entity, some ergs of that pressure, in a self-sacrifice that was ecstatic. All around her, the atmosphere crackled, popped, boomed and thundered with the resultant explosions as immeasurable positive forces recombined and all the previously expended energy was reabsorbed.

Then, indeed, did Helva bless the surgeons. Bless and curse them for hauling her inexorably back from such glorious intercourse. She dazedly recalled her scattered wits as warning lights and signals penetrated the coruscating impressions and forced her to be aware of imminent danger.

Lax figures lay, lifeless puppets with no more sign of vitality than the slight rise and fall of chests.

Scared, Helva tripped the transceivers. Lights reluctantly faded on the transceivers. It seemed an eternity to Helva before Ansra moaned.

"Ansra. Ansra," Helva called in an insistent, hard voice, hoping to penetrate the woman's trancelike state. "Ansra. Ansra."

"Wha . . . what?"

"Get to the galley. Get stimulant K, in the blue i.v. spray."

It was like moving a robot. She kept droning her orders, relentlessly forcing Ansra to obey. The woman's eyes blinked, her body jerked as Helva encouraged, ordered, demanded the necessary actions. Finally she got Ansra's hands around the right i.v., and got the uncoordinated body to depress the dermospray against her arm. The stimulant took effect.

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"Oh, migod: oh, migod," Ansra muttered hoarsely. "Oh, migod."

"Ansra. Give them all injections. Move, woman, move."

The actress was still little better than an automaton so Helva took advantage of her will-lessness to make her give Kurla and Prane the first injections. Then Chadress. It was a stunned group who returned to their former bodies.

"I don't think I can go back there" Escalus told Prane in a hoarse tremulo. He put both hands to his temples where the transceiver had left a red band. "Never thought to see the day when I couldn't face an audience because they *liked* me too much. But man, that place is [illegible]—" his eyes widened with a terror he mastered. "I almost said, pure entropy." And he laughed. "But *that's* what's wrong with it all."

Prane, looking as drained and haunted as the others, managed a weak smile.

"There is no question that we have been overwhelmed by an unpredicted reaction. At this moment," and he paused to emphasize the phrase, "I would find a return engagement inconceivable. No, no discussion now. We need to convert mass—in the parlance of our hosts—into much needed energy and to conserve our emissions. But I want to say how very, very proud I am of you all."

It was as well, Helva knew, for the cast could not have accepted, in their present enervation, the devastating truth of their captivity.

The silence of the ship was unbroken, even by Prane's nightly litany. Helva, too, found herself close to the verge of unconsciousness, too fatigued to worry about the problems of the morrow.

The next day brought no visible change. Everyone was still enervated. Kurla turned professional and roused those seeking oblivion in slumber to take high-protein meals and massive therapeutic ivs.

Towards the evening of that day, Helva got Chadress alone in the galley for a conference.

"We'll have to put it off as long as we can, Helva. These people are drained dry. I know," and he shook his head slowly. "How're you doing?"

"Well," Helva temporized. "I always maintained shell people are as human as anyone mobile. I know it now. I'll find it extremely difficult to go back to Beta Corvi myself. Only I *know* we have no choice."

"What do you mean, Helva?" Chadress didn't have enough energy left to be more than mildly curious.

"They're wondering where we are right now. They have the understudies lined up and raring to learn."

Chadress mustered a defeated groan.

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"Helva, how can we ask anyone here to undertake that?"

"As I said, Chadress, we have no choice."

"I don't follow you."

"There is a little block on any lead into my power sources. I couldn't even dodge a meteor if I had to."

Chadress dropped his head into his hands, his whole body shuddering. "Helva, I *can't* go back. I can't. I'd—"

"You don't have to go back. Not right now. Lord, you don't even have the energy to put on a transceiver," she said, deliberately misunderstanding him. "It's up to me."

"What's up to you?" Prane asked, drifting into the galley.

"I'm going down to explain our absence."

"On the contrary," Prane objected, trying to straighten his shoulders but all he managed was a directionless lurch against the warming units. "I'm the director. I should explain our inability to fulfill our contract."

Chadress groaned in distress. Helva spoke:

"You're out on your feet, Prane. Chadress, too. I'm going. That's final. Chadress, we'll discuss this further when I get back," she ordered. "Chadress?" she prompted until he nodded acquiescence.

Pain assailed Helva's mind for a brief flicker of thought as she reentered the Corviki envelope. The myriad tactile sensations from her trailing appendages indicated the presence of several strong pressure-dominances. How was she going to explain human frailty to these masters of pure energy?

The atmosphere, however, was unusually free of energy emissions. Manager, dark and full and rich, discreetly contained his mass of pressure-dominances. The others, ranged beyond him at a courteous distance, must be the understudies, she thought. If a Corviki had compassionate levels in his consciousness, surely the Manager was activating them for he was patient as Helva struggled to present the explanatory equation, pointing out the unresolvable fractions. He replied with a show of depletion that could only be an apology that the unprecedented feedback and the production of an unstable reaction mass had resulted in such entropy for the visitors. However, they had themselves as cause.

Nevertheless, Manager sternly informed Helva, a new condition of immense significance had developed. Every single energy group around this thermal core insisted on obtaining the formulae which could repeat those unique emissions. The benefits of such expulsion would rejuvenate static energy groups once considered lost beyond reactivation. The formulae must be passed on. No matter would be considered too precious in the exchange.

Helva, feeling she was emitting

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desperate energies, repeated the impossibility.

Some arrangement would have to be effected, the Manager insisted. There was one unit, he drew the equation of sound that meant Juliet, which had shown an admirable control of intrinsic energy. Let it return and deliver the formulae. Otherwise . . . the Manager swayed his tentacles in an unnerving approximation of a human shrug.

For a long interval Helva lacked the moral courage to indicate her return. She tried to think how this simple mission had turned into such a catastrophe. Ruthlessly she reviewed the elements of this impasse, trying to find a solution. There *had* to be one.

How cosmically ironic that Ansra Colmer, so bent on ruining them, was the only personality with sufficient egocentricity to survive the experience. But would she save them all?

"I'm not out of my mind, even if you all are," was Ansra's immediate response. "Nothing . . . not even if you beat me to death . . . could make me go back to that . . . that gas factory. I've done all my contract called for."

"Actually you haven't, Ansra," Davo replied wearily, "not that any of us are likely to take you to task for it at Guild. But those contracts read that, if the Corviki accept our dramatic presentation as payment for their techniques, we must instruct Corviki understudies."

"Go back? Just to teach a Corviki to play Juliet?" Ansra laughed, shrilly, semi-hysterical. She whirled on Prane. "I told them at Regulus that you'd fail. And you have! I'm glad, *glad, GLAD!*"

Her hatred washed like a visible tide over sensibilities already abraded and tender. Still laughing, she careened off the walls on her way to the cabin, collapsing like a limp doll in front of the mirror, alternately laughing and staring at her reflection.

"She's gone stark raving mad," Nia stated in a flat voice.

"I don't think so, unless we're all mad right now," Davo replied judiciously.

"Well, we can't just sit here and let her spite us," Nia exclaimed, rousing to indignation. "She's just got to do her part."

"The show must go on?" Escalus asked sarcastically. "Not this one."

"I apologize to everyone," Prane began, rising to his feet. "Ansra's grievance is with me. You shall not be the victims of it."

"Prane, spare us that role," Davo exploded.

"No role, the solution is simple," the Solar went on, his voice and manner so matter-of-fact that the accusation of heroics was void. "As director, I know every single line in this play. In fact, I have complete recall of some two hundred

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and twelve ancient, medieval, classical, atomic and modern dramas."

"You'd die under the strain," Kurla cried, throwing her arms around him.

He disengaged himself, smiling tenderly at her.

"I'm dying anyway, my dear. I'd prefer a good exit line."

"Next week 'East Lynne,'" roared Helva, successfully shocking everyone alert with her mocking laughter. Prane was deeply hurt, which Helva found a trifle healthier than heroic self-sacrifice. "Now will everyone *calm down!* All is not lost because Ansra Colmer is a vicious vengeful bitch. In the first place, Solar Prane, we don't want the Corviki possessed of our entire bankroll in one mass cathartic purge. One play, 'Romeo and Juliet,' which has rolled 'em up by the fronds, is all we contracted for. And we shall give it to them and then accelerate out of their sphere of influence as fast as I can blow my jets. I shall strongly, urgently recommend that we do not darken their dominance again until our bright boys figure out how to cushion our fragile psyches against Corviki feedback.

"And, Solar Prane, you are not the only person on board with perfect recall. I know that may sound fatuous but I, too—probably Davo as well, possibly our Escalus—know every bloody line of R & J, too. All three of us are physically and emotionally better able than you to go back down to Beta Corvi—

"Listen to me," she bellowed when everyone began to protest. She shifted to the voice that signified a broad smile and hammed it: *"This is your captain speaking!"* And as they broke into laughter, became dead serious. "I, Helva, have the final responsibility for this mission and all on board this ship."

"I know all of 'Romeo and Juliet,' too. Used to play Juliet, you know, when I was in my first hundred," Nia said quietly, before Helva could continue. "And you've forgotten something, Helva. A very essential point. It's *performances,* on Beta Corvi, not rehearsals, which rock us. I feel sure I could cope with a rehearsal situation, with the customary halts and breaks needed to teach understudies. We don't even have to rehearse the full seven hours. Not if these Corviki want the plays so bad. We can call the tune." Then her expression changed and she glanced towards the women's cabin where Ansra was laughing softly. "And I'll be damned if I'll let that bitch close the most successful show I've ever been in."

Escalus roared with laughter and embraced Nia in a mighty hug.

"By the toenails of the seven saints of Scorpius, neither will I!"

"I'm game, too," Benvolio agreed, "and bugger her!" he added with a rude gesture in Ansra's direction.

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"Look, Helva, get the Corviki to give us another day's rest," Chadress suggested. "Then we'll all go down and finish the job. The show must go on!"

"Who'll do Juliet?" Davo asked and then answered his own question by pointing directly at Kurla. "You'll do Juliet."

"Oh, no. Not me!"

"Why not, my sweet young love?" demanded Prane, pulling her hands from her cheeks and kissing her tenderly before them all. "You're more Juliet than she at her best."

"I'm worried about only one thing," Escalus said then. "I don't like her . . . here . . . with us . . . there," and his forefinger punctuated his words with stabs in the proper directions..

"A very good point," Davo agreed with a whistle.

"No problem," Helva assured them. "Miss Colmer is . . . resting, I believe the professional term is. I shall encourage it." And she proceeded to flood the pilot's cabin with sleepy gas.

The Manager signaled acceptance, emitting relief that the problem had a solution. Helva sent everyone off to bed after a protein-rich meal. Kurla and Nia preferred to bunk on the couches despite the fact that Helva had cleared the gas from the cabin. Kurla agreed to administer a timed sedative to Ansra to keep her unconscious while there was no one in the ship.

The cast voted to limit the first rehearsal to four hours. However, all apprehensions vanished when it became evident to the troupe that the understudies were very discreet with energy emissions. In fact, back at the ship again, there was a mood close to hysterical relief.

"Those Corviki are the quickest studies I've ever worked with. Tell 'em once and they just don't forget," Escalus exclaimed.

"Yes, they are holding back, aren't they," Davo agreed. "But will they know how much to emit, to make the show come alive? I mean, there's that old difference between amateur and pro."

"Good point, Davo," Prane joined, "and one I discussed with Manager. I discussed unconserved energy levels with him and he assured me that he had taken measurements during our performance so that they will know when to emit energy to produce the proper reactions. He has great dominance, that man, great dominance."

"And a fine sense of level integrities, too," Chadress added, nodding thoughtfully.

"You sound more Corviki than human," Nia drawled in her droll way.

Prane and Chadress looked at her, their expressions puzzled.

"Well, you do," Kurla agreed.

"Imitation is the sincerest form of flattery, you know," Prane said

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into the silence but, to Helva, his joviality sounded forced.

The second rehearsal went so well that Prane decided only one, slightly longer, additional session would complete the contract.

"Let's get it over with then," Escalus suggested. "There's something seductive about that freak-out place that gets to you. I've a hard time thinking human."

Escalus was right, Helva thought. She found it all too easy to think in Corvikian terms. And Prane and Chadress seemed to have moved theater semantics into another frame of reference entirely. She'd heard them discussing staging in terms of excitation phases, shell movements, particle emissions, sub-shell directionals until she wondered if they were talking theater or nuclear physics.

She kept an eye on Prane, anyhow: Kurla was, too, but playing Juliet to Prane's Romeo was overloading her circuits sufficiently to cloud her discretionary— Helva caught herself up sharply. The sooner they all got away from here, the better.

She watched Kurla administer Ansra an additional sedative. The woman had been kept unconscious now for forty hours. Five more wouldn't hurt her. It had certainly improved the ship's atmosphere.

She told Kurla that she'd be down directly and then checked all circuitry on the ship. Once the Corviki removed that power block they could leave, but she wanted no last-minute delays.

Prane was offstage when she got down, dominating with his understudy. She found hers and then was swept into scene ii of the fourth act.

The Corviki had more trouble this cycle controlling their suppressed energy. It occurred to Helva that Davo need not have worried that the dramatic content would be lacking. Remove all the instructors with their frail spirits and the Corviki would deliver every bit of excitation required by the formulae.

Helva had to expend effort now to control excitement. Prane did, too, for as he and his understudy, the two Balthazars beside them, waited to enter the "churchyard" for Romeo's death scene, he seemed to be leaking energy.

"The time controls are fixed?" he asked nervously. "They cannot be altered?"

He was on before Helva could answer.

The rehearsal was soon over. The Manager had to exert tremendous control over his spontaneous emissions as he complimented the actors. He announced that the information on isotope stabilization had been sent to the ship in a specially prepared container, and that the ship's power was unblocked. He kept emitting on such a broad band that Helva felt the insidious tug of entropy and resolutely made her farewells.

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Transferring back, it took her a moment—a moment of regret that seemed an eternity—to get her bearings. She detected the container neatly secured in her engine room, violently radioactive as yet, so it had better stay where it was.

Someone groaned in the dimly

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lit cabin. Dimly lit? But she hadn't lowered the lights!

She brought up every light in the ship, scanning the pilot's cabin for Ansra. The bed was empty. How had she thrown off the drug? Helva did a searching scan and found Ansra, crouched down by Prane's body. In her hands were the wires that led to the transceivers on Prane and Kurla.

"Ansra, that's the same as murder!" Helva roared, trying with sheer volume to stun the woman. With the determination of vengeance, Ansra ripped the helmets from their users and tried to tear the units apart.

Even as Ansra was acting, Helva triggered the return on the transceivers, desperately hoping that she'd forestall Ansra's intention. It seemed so long, with the woman's harsh panting as metronome, until transceiver lights winked out across the rim of the helmets. On one, the light remained. On Chadress.

"Davo! Davo!" Helva shouted.

The actor, shaking his head as the urgency of her voice roused him, responded dazedly. Then he saw Ansra, saw what she was doing and launched himself at her. Davo's thrust pinned her against the far wall as other members of the cast began to revive.

"Escalus, help Davo with that crazy woman," Helva ordered, for Ansra was twisting and screaming, beating at Davo with maddened strength. "Benvolio, come on, man. Snap out of it. Check Prane. How's his pulse?"

Benvolio leaned to the limp body beside him. "Too slow, I think. It's so . . . so faint."

"I've got to get back to Corvi. Someone. Nia, you're awake. Find two usable transceivers in the mess Ansra made of them and put 'em on Prane and Kurla. I've got to get them back here."

"Wait, Helva," she heard Davo call as she was in the act of transferring.

The Manager was beside her. And so were the shells that were undeniably Prane, Kurla and Chadress. Their pressure dominances were overwhelming.

"Stay with us, Helva. Stay with us. It's a new life, brand new, with all the power in the universe to control. Why go back to a sterile life in an immobile envelope? Stay with us."

Too tempted, too terrified to listen further, Helva retreated to the safety of her ship, the sanctuary of the only security she knew.

"Helva!" Davo's voice rang in all her ears.

"I'm back," she murmured.

"Thank God. I was afraid you'd stay with them."

"You knew they'd stay?"

"Even without Ansra's help," Davo admitted. Beyond him Nia nodded.

"It's the answer for Kurla and Prane, you know," Nia remarked. "Hell, they can combine energies,

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now," and her laugh was mirthless.

"But Chadress?"

"Shocked you, huh, that a brawn would defect?" Davo asked sympathetically. "But he wouldn't be a brawn much longer, would he, Helva?"

"And what if I had stayed?"

"Well." Davo admitted, "Chadress didn't think you could but he did think you should."

"It was a case of being where I am needed, Davo. And sometimes you have to help by *not* doing anything, I guess," she added, more to herself. She looked then towards the four breathing but lifeless bodies. *"Four?"* she cried aloud, stunned to identify Ansra, laid beside the others. "What did you do? How could you do it?"

"Easy," Nia replied, shrugging negligently. "A case of the punishment fitting the crime. Besides, the Corviki are better qualified to deal with unstable energies than we are, Helva. Can't we leave now?"

"Manager said the exchange had been made," Escalus put in. "Have they unblocked your power?"

"Yes," Helva sighed, unwilling to act yet.

"Helva," Davo murmured gently, his hand palm down on the titanium column, "Helva, the play was the thing, wherein to catch the conscience."

As she wearily fed the return voyage tape into the computer, his words echoed in her mind like a gentle absolution. ■

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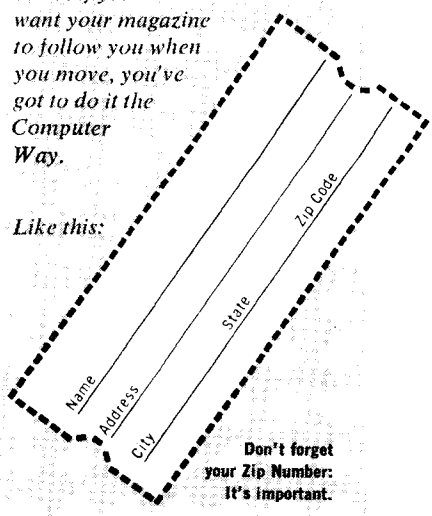

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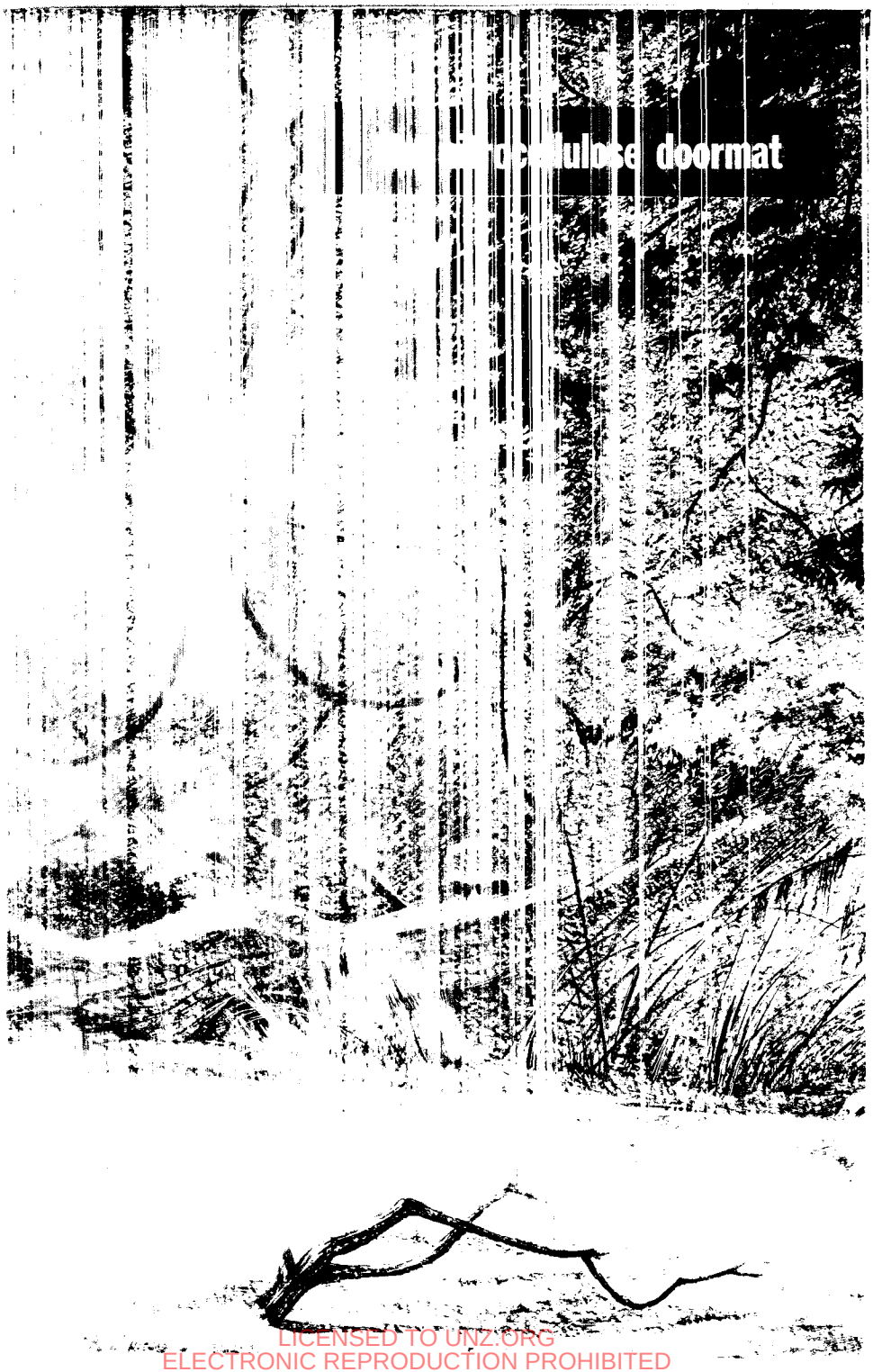

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. . . Or "Who put the pepper in the chocolate cookies?"

CHRISTOPHER ANVIL

Illustrated by Peter Skirka

Colonel Valentine Sanders of the Interstellar Patrol tightened the restraining web as, around him, the globular screen showed the recorded scene of jungle and Space Force combat infantry.

Just ahead, beyond a thin screen of leaves, water poured in a wide sheet over a rock ledge, to foam and roar amongst the tumbled stone blocks below. On all sides, the blue-green trunks of giant trees twisted up through green twilight toward a sky that could be seen only as occasional patches high overhead. Through one of these rare openings, a shifting oblong of light shone down on the tangle of intertwined mossy roots on the jungle floor.

The air, hot, rank, and damp, with only a faint suggestion of a breeze, added the final touch to an illusion of reality that was almost complete.

The colonel glanced back. Through the trees, men darted forward, obviously well-trained, in good condition and alert, but very lightly armed. A little upstream of the waterfall, a lightly armed infantryman crawled out behind a mossy log, to peer through straggling weeds at the far bank of the stream.

The stream, about eight inches deep, and roughly forty feet across, was flowing swiftly over a bed of rock, strewn with occasional logs and flat stone slabs. The far bank rose steeply about eight feet high, topped by gently waving leafy branches.

What was atop the bank, behind the leaves, was anyone's guess.

Frowning, the colonel glanced at the Space Force infantryman lying behind the log. The colonel could think of a number of devices for solving the problem of that bank, but the infantryman's only weapon seemed to be a slug-throwing rifle, and his only protection appeared to be a helmet. The usual equipment of the Space Force combat infantry was such that one man

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armed as usual would have been more formidable than a thousand men armed like this.

Behind the log, the infantryman now bunched himself, as if to cross the stream in a rush. But then he paused and looked again. First, he would have to drop down the bank on the near side of the stream. Then there would be the splashing rush across forty feet of water, flowing over an uneven rock bottom that was probably coated with slime. Then there was the problem of getting up the bank on the far side.

The infantryman gave a slight shake of the head, and crouched lower. Without his usual equipment, his special skills would be a burden. He would constantly feel the need to use this or that piece of equipment—that he didn't have.

Scowling, the colonel looked around. In this situation, a band of aborigines could slaughter the best troops in existence.

Now a second infantryman, in mottled green-and-gray camouflage suit, crawled forward and tugged at the first man's ankle. The two talked in low murmurs, then the second man crawled forward to take a look. He shrugged, scrambled out from behind the log, and slid over the bank. As he splashed out in the stream, the first man shoved his rifle forward and watched the far bank.

A third infantryman eased forward behind a tree as, halfway across the stream, the second slipped and fell. A fourth man crawled up behind a low pile of mossy rocks, and peered out at the far bank. The second, his wet uniform clinging to him, limped through the rushing water. A fifth and a sixth infantryman, as lightly armed as the rest, slipped forward through the trees.

In his mind's eye, the colonel could see the whole near bank filling up with men stopped by that stream. He stared out across it, to see the second man find a handhold, and start to haul himself up the far bank, where the leaves moved gently in the breeze.

From behind the delicately waving leaves, brilliant lines sprang horizontally across the stream, to slice through brush, trees, and men like knives of light. Dazzling puffs of luminous vapor reached across the stream, and on the near bank blazing fireballs burst in explosions of bright droplets that left crisscrossing tracks like a thousand fiery spiderwebs. On all sides, the ground lifted in eruptions of flying dirt and rock.

The edges of the restraining web bit in hard as the colonel forgot himself and sought cover. With an effort, he relaxed, and looked around at the recorded chaos of blurs as the viewing head left the site of the ambush. The record abruptly came to an end, and the screen around him went blank.

The colonel took a deep breath,

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and unlatched the restraining web. The globular screen divided into sections and swung up, to nest itself out of sight overhead.

The colonel glanced across the room, where the strongly built Section Chief, his penetrating blue eyes alight with anger, looked up from a viewer, snapped out the record spool, and said, "What do you think of it, Val?"

"Those were Space Force *combat infantry*?"

"Correct. Their best."

"If we used men like that, we'd be finished in a month."

"The circumstances were peculiar. Take a look at this." The Chief tossed across the little spool, and the colonel bent to snap it into a viewer on a stand nearby.

A Space Force brigadier general, spare, trim, and frowning, appeared.

"The scene you've just witnessed was the beginning of an action that destroyed the 1866th Combat Infantry Regiment. This was one of our crack units—every man was first-rate. Four days earlier, the 1728th Combat Infantry was wiped out in a similar action. By 'wiped out,' I mean destroyed as a unit. Both regiments suffered over eighty percent killed. Most of the remainder were seriously wounded. Only a total of thirty-one men remained fit for service from these two actions.

"These defeats were inflicted on us on the planet Terex, an earthlike world with people like ourselves. Although their technology was not very advanced, Planetary Development Authority considered them so far advanced in other respects that they granted the planet provisional status. About two years ago, a series of petty revolts broke out on Terex. The local government appealed for help. Planetary Development Authority is sympathetic to the locals, and regards the planet as a showcase of 'interplanetary cooperation.' PDA, therefore, put this request for help through in record time, and we were ordered in to straighten out the situation. We were also ordered, in the strictest terms, not to offend local sensibilities. The locals, while not very advanced technologically, have a powerfully developed set of priestly hierarchies, and we were *not* to interfere in religious matters.

"Unfortunately, little by little it developed that the local gods are allergic to modern technology. They don't like air transportation, or mechanized ground transport, or computers, satellites, or any of a very large variety of our weapons. The high priests explained that our equipment creates 'bad vibrations.' A reconnaissance satellite is a 'new star,' which disrupts all kinds of astrological considerations. Gravitors are anathema—they 'warp the lines of destinic action.' Aircraft are 'solid objects which unnaturally

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cut the rays of influence of the stars.' Ground transport is all right, provided it doesn't get its motive power from 'unnatural heat,' which 'disturbs the solar influence.' For similar reasons, all manner of our weapons can't be tolerated. All these things become *religious* matters. If we didn't obey these injunctions, we would be irreligious. This would offend local sensibilities in the worst way, and that is exactly what we were ordered not to do.

"Now, this situation didn't present itself in a clear-cut way. It developed piecemeal. At first, the locals enthusiastically welcomed our troops. Next, the priests insisted that it would be necessary not to use this or that device or weapon. Gradually, bit by bit, the situation changed. The final result was that our men wound up practically disarmed.

"To begin with, too, the guerrilla problem didn't look too bad, and the local transportation system, that we were going to have to rely on if we didn't use mechanized transport, seemed reasonably reliable.

"Unfortunately, we ran into a local religious sect called the Skaga cult. This gang operates on the theory that 'good can be made out of evil.' The Skagas do evil to others in confidence that the 'balance wheel of fate' will return good to the victim, evening up the score with no effort on the Skagas' part. The Skagas evidently decided the Space Force was ripe for a lot of good done by their special methods. Without our even knowing there was such a cult, they infiltrated the loading stations where our supplies are transferred to the local transportation system, set up a black market, and began selling our weapons to all comers—including the guerrillas.

"Meanwhile, we were trying to prevail on the local priesthood to reconsider the ban on our weapons. They finally agreed to let certain banned weapons be used, tentatively. We rushed them down to the planet, and, thanks to the Skagas, the guerrillas got the weapons first. By torture, they forced our captured troops to explain the weapons.

"The guerrillas, incidentally, had the advantage by now. Our men weren't properly armed, didn't know local conditions, and were fighting in a way they weren't used to. The guerrillas dealt out a rough series of partial defeats, and then, using our own recently shipped weapons, wiped out two of our best regiments.

"Our local commander found himself with a series of defeats, a well-organized black market draining off supplies from the transportation network, a powerful guerrilla movement well supplied with our own weapons, and worst of all, a large proportion of the people who suddenly regard the Space Force, and humans generally, as inferior

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beings. 'See,' the argument goes, 'the Skagas are smarter, and the guerrillas are better warriors. The spacemen are weaklings. They cannot manage their own affairs. They are unfit to lead others.' The result of this attitude is every kind of obstruction and irritation, with the prospect of much worse in the near future.

"To straighten out this mess, our commander on the planet could see only one thing to do—use stronger weapons. But, by now, even this won't work, unless we carry out a general slaughter. Too large a part of the populace is now sympathetic to the guerrillas. And we are still hamstrung by our orders. To get them changed, through channels, is proving a very slow process. Well—when the final casualty lists from the two big ambushes came in, our commander shot himself. The mess has now been turned over to me."

The Space Force general drew a deep breath.

"This situation is now so hopelessly confused that I will be frank and say that I am out of my depth. I hereby respectfully request interservice assistance."

The colonel snapped the spool out of the viewer, walked over, and handed it back. The Chief, sitting back flipping through a bulky set of printed sheets, took the spool without looking up, and shoved a thick sheaf of reports across the desk. "Here."

The colonel took them and scowled.

"Are we supposed to *read* that stuff?"

"That's the general idea."

"By the time we get through, half the combat infantry in the Space Force could be buried on Terex."

"Just skim it. We aren't going to be able to prepare as thoroughly for this job as I'd like."

"Why not put it through the mill, and make it into an orientation?"

"Too realistic. This way, the misinformation has to go through a fine-mesh sieve before it gets into our minds."

The colonel frowned, and opened up the topmost report, to skim rapidly:

The Gr'zaen Religion—
Sun-Worship on Terex
by
J. K. Fardel, Ph.D.

While Terexian sun-worshipers, like those of other religions, on this planet . . . gladly welcome converts to their religion . . . they, too, have the regrettable habit of decapitating those who seek to observe their rites . . . A further obstruction to objective research . . . arises out of the fact that those who seek to question the true believers regarding religious details are soon shunned, while a true believer who reveals details of the rites and practices is . . . likely

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to be punished by hideous torture. Therefore, despite the use of . . . spy devices . . . a strictly accurate and complete description of the Gr'zaen religion is somewhat hard to come by. Nevertheless, it is possible to make a few . . . reasonable approximations. On Earth, the sun-worshipers of ancient times—

The colonel looked up exasperatedly.

"At least, let's run this stuff through a condenser."

"No. That loses the unique flavor some of these reports convey. But, as a matter of fact, I think the basic situation is clear enough so we won't have to absorb all of this misinformation."

"I'm glad to hear that."

The colonel flipped through the sheaf, and came upon a report headed: "The Terexian Transportation Network." He skimmed this rapidly, and a picture came across of a collection of animal-drawn vehicles and primitive railroads, of coastwise shipping infested by pirates, of inclined roadways down which vehicles traveled by gravity, to be hauled up a steep slope for the next stage, the whole so-called transportation system being sluggish, subject to a complete stoppage on every religious feast day, and dependent for continuous performance on a large number of warehouses in which goods periodically piled up and drained out as the erratically functioning parts of the network speeded up or broke down.

Scowling, he read more slowly, noting the opportunities this transport net offered black marketeers and guerrillas. To top everything else, it was irreligious to work on feast days, so on these days the Terexian guards went off duty.

The colonel next leafed through the stack until he came upon a report headed "The Irregular Volunteers on Terex." The choice of words puzzled him, but became clear as he read a paean of praise for the guerrillas, and realized that the writer of this PDA report hated the Space Force.

The obvious next thing to look for was information about the Skaga cult. But after reading it, the colonel knew less than he'd thought he'd known to start with.

The Chief impatiently tossed the last report on the desk.

"It seems to *me* that the local guerrillas, religious leaders, and Skaga cultists, are all different parts of the same thing—a kind of machine to grind the Space Force troops on the planet to a pulp. But it's hard to see how the Skagas get along with the rest. The others seem to have moral standards."

The colonel looked up from a report on "comparative literature," which praised the "technical artistry" of the locals, but complained of their "primitive exaltation of craft and prowess. Indeed, the most popular folk hero, in whatever

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guise he may appear, is inevitably faced by a formidable enemy, whom he defeats by a stroke of genius, usually delivered while the hero's own cause is on the brink of disaster."

"Hm-m-m," said the colonel. With an effort, he put his mind on the Chief's comment. "Well, the Skagas and the other religions may not *get along* with each other, but they may *work together*, all the same."

"Informally, you mean?"

"Maybe without even thinking they *are* working together."

The Chief nodded, and sat back.

"The trouble in dealing with a whole race, such as this bunch, is that you *think* you're dealing with so many individuals—and it's true, you are—but it also involves more than that. In such numbers, there are unseen inter-relationships, and statistical effects. It's as if the whole race together made up an organism. One section may do one thing, while another section does another thing, to create an overall result neither section appears to aim at. In this case, the religionists disarm the Space Force, the Skagas rob them, and the guerrillas kill them. *And the Terexians, as a whole, draw the conclusion that humans are inferior beings.*"

"As if," said the colonel, "the overall situation were a kind of test?"

"Yes. And conducted according to the Terexians' idea of what constitutes superiority." He looked through the stack of reports, separated one from the rest, and read: "'. . . Characteristic saying of the local pundits is that "any beast may be strong, but it takes a man to be wise" . . .'"

"Well, that fits. Their actions have been such as to eliminate the effect of the Space Force's superior *strength*."

"Hm-m-m. And the human race then proved 'inferior'."

The colonel nodded. "Only strong—not wise."

"Correct."

"Well," said the colonel, "they've tested the Space Force. But unfortunately for the Terexians, *we* have now been called in."

The Chief sat back with a speculative expression.

"Considering this judo hold the Terexians have on the Space Force, exactly what do *we* do?"

"Break the hold. Of course, the Terexians may lose a few fingers in the process."

"How are you going to get at those guerrillas?"

"Through the Skagas."

The Chief glanced thoughtfully off in the distance, and suddenly nodded.

"What will you need?"

"Some stuff from Special Devices, the local language, transportation to the planet, an H-ship and crew, and permission from the Space Force to operate at one of their

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supply centers where goods are shipped to the planet, before they're transshipped by the local transportation system. Plus twenty or thirty men to do the job I have in mind at the supply center."

The Chief shook his head. "You can have everything but that last item. You know our manpower situation."

"In that case, get me permission to recruit from among the Space Force veterans who survived that ambush."

"Wait a minute. You've got at least four unassigned men—Roberts, Hammell, Morri—"

"They're still in Basic."

"And everyone else is tied up?"

"Completely."

"In that case, I suppose there's nothing to do but try this idea of getting some volunteers. But how you're going to get volunteers from amongst those veterans is a good question. These aren't impressionable recruits. How are you going to get them to leave a comparatively soft—" He paused suddenly.

"Ordinarily," said the colonel, "they'd only smile. But there's nothing ordinary about what *they've* been through lately. I think they'll join us fast enough—if we promise them that their first assignment will be *revenge on the Skagas and the guerrillas.*"

The Chief nodded.

"O K. Make your arrangements, and I'll get permission for you to recruit."

The colonel's arrangements went with a combination of smoothness and jarring inconsistency. S-Branch promised a timed explosive, minute quantities of which would do everything the colonel desired, with delivery on Terex in two days at the most. T-Branch then patiently explained that it was absolutely impossible to get a human being to Terex in less than ten to twelve days, if the idea was to get him there alive. I-Branch obligingly offered to put the colonel, by transposition, onto a Space Force ship near Terex, within twelve hours, and in the guise of a Space Force officer. This would incidentally have put the colonel, as head of Operations, at the mercy of Intelligence, and he politely refused to do it. I-Branch then grudgingly went along with his original plan, but pointed out that the Space Force could lose a lot of men while he was spending twelve days on the way to the planet. The colonel exasperatedly got in touch with S-Branch, and demanded to know how the timed explosive could be made and gotten to Terex in only two days, all told.

"Nothing to it, Val," said the head of S-Branch cheerfully. "It happens that we're testing direct-contact with a G-class ship off Terex. The contact cross-section is only about two feet in diameter, but there's no difficulty getting our stuff through. For that matter, we could put *you* through, lengthwise, if you were in a hurry."

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"I *am* in a hurry."

"No problem. We can shove you through in about six seconds. Then the G-ship can deliver you to the planet, or to another ship in the region. How's that?"

"That's fine."

"Let us know when you're ready."

A few moments later, the screen was blank, and the colonel was considering that what T-Branch stated to be impossible in under ten days, could be almost completely done by S-Branch in six seconds. And the beauty of the thing was that transportation was the *specialty* of T-Branch.

Exasperatedly, he tapped out the Chief's call number. The important thing was to make sure the Space Force veterans ended up at the right place at the right time, with permission to join the Patrol.

When his arrangements were

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complete, the colonel went down to S-Branch, was strapped flat on a kind of stretcher on rails, and pushed through what appeared to be a porthole looking into the interior of a patrol ship, and through which the narrow rails of the stretcher passed. He was slowly slid through and unstrapped on the other side, where an Interstellar Patrol major apologized, and explained that it was "bad business to hit the edge of the contact zone," so they had to strap anyone who passed through when the cross-section was so narrow. A moment later, a package containing the colonel's explosive came through, and fifteen minutes after that he was talking by communicator to the captain of the H-class ship assigned to the job. Late the next morning, the colonel and the captain of the H-ship were on Terex, wearing civilian clothes for disguise, and talking to a Major Brouvaird, the officer in charge of Space Force Offloading Center 2 Terex.

"You see," growled Major Brouvaird, "they're all wearing loose coats and those damned oversize floppy straw hats." The major moved closer to the edge of the platform looking down on a crowd of Terexians working in the unloading line. "Watch this. You see that bird knocking open that ammo case, halfway down the line? Watch his hands. There he goes. Twenty-two magazines went out of the case into that damned keg, and two went under that loose coat of his into the pouches on a leather harness underneath. He must be about loaded up, now. You notice how he moves? Sort of careful? All that stuff in those pouches is getting heavy. The square edges are digging into his ribs. There he goes, now."

Down below, in the jostling line, the Terexian held up his hand. His voice drifted up: "Tika b'wip, tu!" the euphemistic translation came to the colonel simultaneously: "Ship must lighten load, quick!"

A demoralized Space Force private nodded, and the Terexian, walking with a peculiar swaying motion, headed for the rear of the line, where a door stood open to the outside. The private stared at the floor or the wall—anything to avoid watching the Terexian workers as they manhandled the Space Force cargo.

"And there he goes," said the Space Force major, watching the Terexian go out the door. "Out back, near the latrine, there's a Terexian refreshment stand. This bird will step into the booth, and come out with a fresh harness. The candy wagon back there will lug out all the loads from the workers, and that's just the first skim, off the top."

The colonel nodded, and adjusted his civilian suit. Considering the haste with which this assignment had been prepared for, the suit was like a bad omen. It had a shirt

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that seemed to have no pores, a collar that dug into his neck, and cuffs that felt like slippery plastic bands around his wrists. The jacket was made out of some kind of bristly hair that looked all right in the mirror, but the bristles stuck into his neck above the collar. The trousers were made out of the same material, so that it felt like poison ivy around his neck, and from his belt to his shoes. The shoes were too small.

Possibly as a result of the frame of mind these clothes put him in, when the colonel spoke, his voice came out with a bite like a high-speed drill.

"Why the devil are they allowed to break the cases?"

The Space Force major winced under the unmistakable lash of authority, then recovered and stared at the lean civilian.

"I thought, Mr. . . . ah . . . Fisher, that you had been thoroughly briefed on this procedure."

"So did I," said the colonel shortly. "But no one mentioned this piece of insanity. I knew there was pilferage and outright robbery, and I knew your cargoes are transshipped over the local transportation system. But no one bothered to tell me that the cargoes are broken out of their shipping cases and transferred to other containers. What's the point? What's wrong with the original shipping cases?"

"They are in advance of local technology."

"What of it?" said the colonel.

The major frowned, seeking to explain to himself Fisher's civilian capacity, military bearing, and obvious authority.

The colonel, unaware of the effect he was creating, thrust out his jaw.

The major squinted at the card the colonel had handed him on arrival:

INTERSTELLAR
INVESTIGATIONS
CORPORATION
L. L. Fisher
Chief Regional Operative

The card had a picture of the civilian on it, a miniature set of fingerprints, retinal patterns, and other identifying data, and the warning, "THIS IS A TIMED CARD. CARRY OUT YOUR IDENTIFICATION WITHIN ONE HOUR OF RECEIPT."

The major seemed to have heard of something called Interstellar Investigations, which now and then came into the news when it nailed some particularly troublesome operator. Nevertheless, no detective, Chief Regional Operative or otherwise, would have occasion to develop that ring of command, and that manner of authority. It was that that bothered the major. His instincts told him that he was dealing with a military man, and one of comparatively high rank. The civilian clothes and the card didn't prove a thing. The orders the major

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had received, instructing him to cooperate with one L. L. Fisher of the Interstellar Investigations Corporation, who was "assisting the Space Force in attempting to trace losses incurred in shipment," and so on—all that was so much humbug. It came to the major like a bolt of lightning that, somewhere in the Space Force, someone of very high rank had gotten wind of the stink off Terex, and had either come himself to investigate, or had sent a trusted member of his staff—whoever it was was now standing there in disguise right beside the major. The disguise no more concealed his real nature than a necklace of flowers on a tiger—but of course the major had to act as if it fooled him.

With a puff and a sudden heat, the identification card burst into dust. The major shook his hand, and took a deep breath.

"Ah—Well, you see, Mr. Fisher, this is typical of our whole problem on this planet. In one way or another, the locals nullify the advantages of our technology."

"What's the pretext for breaking the shipments out of all those cases?"

"The locals have strict regulations for containers to be used on their transportation system. They make *their* cases out of solid wood and iron. They specify a certain minimum thickness for each size of keg, barrel, drum, crate, or what-have-you. Well, *our* cases are stronger. But *their* standards are applied arbitrarily. They won't let our cases be used on the planet—*because they are of inferior weight and thickness.*"

The colonel looked down on the reloading line. As he watched, he could catch the quick movements as grenades, small hand weapons, and magazines disappeared under the loose cloaks. He began to see other things, too, such as skillful wielders of hammers and chisels who opened cases of rifles, and deftly knocked sights out of line as they transferred the weapons. Five hand-launchers came out of one case, and went into a barrel that would only accommodate four of them without jamming. The little bag containing the firing pins vanished into a Terexian cloak. Onto these containers, the shipping labels were slapped in odd positions. Doubtless *these* containers would not be pilfered en route. Meanwhile, over in a corner at the far end of the line, half-a-dozen of the locals were bent over a kind of keg, feeding in what looked like a length of thin wire off a small roll; now a grenade went in, and the Terexians carefully pressed the cover down, pulled out some of the wire, cut it off, and pushed the end back inside. What could *that* be but a booby trap?

Beside the colonel, Captain Finch of the H-ship stood, his concealed recorder taking down sight and sound.

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The Space Force major was saying, ". . . Obvious enough they're robbing us, but we aren't allowed to use our own loading crews. That would 'deprive Terexian citizens of much-needed employment.' If we take them to court, it's our word against theirs, and any number of them will swear we're lying. I could go right down there this minute, grab one of those loaders with a full harness, and *I* would be arrested for assault and battery. We need our own loading crews, our own courts—and our own transportation system, as a matter of fact. But *that's* unthinkable. These are our 'loyal allies in the fight against the guerrillas.' By 'giving them employment,' we are 'winning their gratitude, and gaining their loyalty in a most effective way.' Sir, until we get PDA's wishful thinking and propaganda out of the way, we're going to get slaughtered on this planet."

The colonel noted the "sir," realized with a shock what had happened, and then accommodated himself to it in an instant.

"Never mind that," he said. "Mr. Dexter and I, with our . . . ah . . . team of operatives . . . will do what we can to rectify this situation. Now, what we need is an enclosed building of some kind where we can get at a portion of the shipment before it goes through the reloading line here."

"Well, sir—"

"Mr. Fisher."

"Yes, Mr. Fisher. Excuse me. There's a sizable shed out back, that you could use. Of course, you'll want to keep it secret that you're using it. That poses a problem, but—"

"Not at all," said the colonel. "We *don't* want to keep it secret. We want it announced that a team of human experts has arrived to track down the source of the trouble. We want a published warning, over your signature, that any individual who comes into possession of any human military equipment should turn it in at once, for his own protection. Every shipment that goes through this center will have a big seal put on it, announcing that it is under the especial protection of the Interstellar Investigations Corporation, and that secret hidden methods of extraordinary craft will be used to track down and punish anyone who unlawfully appropriates the contents."

The Space Force major tried to look enthusiastic about this idea, gave up, and frankly looked sick.

"The last time anyone tried anything like that, the pilferage rate at that center went up to one hundred percent."

The colonel smiled.

"Have faith in the Interstellar Investigations Corporation."

"I'll be a laughingstock for making the announcement."

"A small sacrifice to make for the good of the service."

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The major looked pained, but nodded dutifully.

"Yes, Mr. Fisher."

Having finished work at the loading center, the colonel and the H-ship captain went back to their ship. The colonel was mentally damning the haste with which this operation had been rushed through. He particularly damned himself for not insisting that the reports, imperfect or not, be made up into an orientation. He had missed the obvious business about transferring weapons from one container to another, and there was no predicting what else he might have missed. As he and "Mr. Dexter" now approached the ship, he saw twenty or thirty Space Force men in battle dress debarking from a Space Force tender not far away. There were Terexian workers scattered all over the field, and some of them were doubtless spies.

The Space Force men formed a column of twos, and marched toward the H-ship, which was lettered:

INTERSTELLAR
INVESTIGATIONS
CORPORATION

"Mr. Dexter" said dryly, "Here we go, Mr. Fisher."

The colonel nodded.

"Let me handle it, Mr. Dexter."

The Space Force veterans came to a halt and faced to the front. The sergeant in charge glanced at his orders, and looked up in bafflement at the ship. Several Terexian laborers dawdled at their work as they shifted crates nearby, and shot furtive glances at the ship and the veterans.

The colonel stepped forward, and cleared his throat loudly.

The men looked around.

The colonel ran a finger around his uncomfortable collar, and looked at the sky, as if seeking inspiration.

"Gentlemen . . . ah . . *men*—" He cleared his throat again. "We of the Interstellar Investigations Corporation have been called upon to use our modern techniques of detection, to . . . ah . . . ah . . . detect and track down those ill-advised few among the largely loyal native population who are attempting pilferage upon the Space Force, and, lacking sufficient trained manpower to carry out our scientific detection procedures, which I understand would not . . . ah . . . fit well with the cultural patterns of thought and action upon this planet, we have obtained permission to train and put to use combat personnel who are temporarily . . . ah . . . dismounted pending future assignment. Ahem."

The Space Force veterans were looking at him with a variety of expressions. Some were studying him as if trying to identify just what kind of creature he might be, and they looked as if they had not been able to pin it down yet. Others looked bored. A few looked sick.

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One looked as if he would like to break the colonel's neck, and was having trouble arguing himself out of it.

At the crates, the Terexian workers cast brief sharklike smiles at each other.

"Now . . . ah . . . gentlemen," said the colonel, "you will please file into the ship for . . . ah . . . orientation to this new task, which, I might add, is extremely important to the pacification and mutual assistance effort on this whole planet."

Some of the men looked as if they had finally succeeded in identifying him. Those who had looked sick looked sicker, and there were more of them.

After a distinct hesitation, the sergeant cleared his throat, and gave a low-voiced order, spoken like a curse, that started the men filing into the ship.

The colonel stepped inside, watching the expressions of the men as they crossed the short catwalk leading from the fake outer hull to the massive inner hull.

The men looked around blankly, then nudged each other as they passed through the massive lock to the inner hull, to find themselves jammed in the comparatively small interior of the real ship. The inner and outer locks shut.

"All right, men," said the colonel, and this time his voice was lower, and slower. "Now that you're all temporary members of the Interstellar Investigations Corporation, I will tell you how we detect who stole Space Force equipment, and I will leave it up to you to decide who wants to take part, and who would rather get out now. First, let me mention that only the first word in the Corporation's name is real. The rest is a dummy. And the purpose I stated outside, for the benefit of whoever might hear, is also a dummy. We are here for exactly one real purpose—to blow the Skagas, the black-marketeers, and the guerrillas, sky-high. Anyone who wants to join us in cleaning out this mess of thugs and bushwhackers will be welcome—provided you can pass our tests. Now, as I understand it, you've all been in combat. But how many of you have been in an offloading center on this planet?"

Everyone looked blank.

"The captain of this ship and I visited one of these offloading centers this morning," said the colonel. "We went as investigators for the Interstellar Investigations Corporation. We recorded what we saw, and you might be interested in seeing it. Captain Finch—If you will project—"

The room darkened, and multiple rays of light shone out from the far wall, so that each man seemed to see before him what the colonel and the H-ship's captain had seen earlier. The conversation also was reproduced, and as the scene progressed, an angry murmur rose in

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the room. At the end, when the lights came on, the colonel had changed back to his uniform, and there was a booth near where he had stood, with the words above it:

INTERSTELLAR PATROL
RECRUITING

Boiling mad, the Space Force men shoved forward, toward the booth, where their requests were processed with lightning speed.

That over with, and their anger having cooled to that thoughtfulness that can follow sudden emotional enlistment, it dawned on some of the new Interstellar Patrol candidates that they had not yet found out exactly how the colonel intended to finish off the guerrillas. But already, the first group of candidates was being assembled for transfer to the testing ship—the G-class already off the planet checking its contact equipment, was to be used for that purpose. There was a lot to think about all of a sudden, and not much time to think about it. The Interstellar Patrol recruiting sergeant suddenly found himself answering a lot of questions.

"Ah— We have to pass *admission* tests? What happens if we don't pass them?"

"You don't make it into the Patrol. And then you can't take part in the operation. But you'll pass them. Don't worry."

"How many tests are there?"

"Five."

"If we don't make it, we will go back to the Space Force. Right?"

"Not necessarily."

"What do you mean, 'not necessarily'?"

"You can't be a candidate in the Interstellar Patrol and a member of the Space Force at the same time, without special permission. If, for instance, you're in a Space Force guardhouse, and the Space Force wants to be sure to get you back and wring the juice out of you, if you don't get into the Patrol, then we have to hand you back. But that isn't how it was done this time. The first paper you signed was your resignation from the Space Force. The second paper was your provisional enlistment in the Interstellar Patrol. So, you see, if you fail the tests, you don't go straight back into the Space Force."

"What *does* happen to us?"

"Well— That's a good question."

"You *bet* it's a good question. What's the answer?"

"Hm-m-m . . . I don't know. Colonel?"

The colonel was smilingly handing the bulky sheaf of enlistment forms up through a hatchway to someone on the deck overhead. He looked far more formidable in uniform than he had in the suit, but he also had a look of well-being that hadn't been there before. The look of well-being had come over him as he watched the men crowd around the enlistment booth.

"Yes?" he said, benevolently.

"Sir, one of these men wants to

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know what happens to him if he fails the tests."

The colonel looked incredulous.

"*Fails* the tests?"

"Yes, sir."

"Oh, I don't think anyone here has to worry about that. Just do your best, men. You see, these tests are designed to weed out people so far below the level we need, that it would be pointless for us to try to bring them up to it. We usually have a high rate of such failures. But you are all pre-selected, anyway. It's hard to believe that Space Force combat veterans, from crack units, wouldn't meet the level of Interstellar Patrol *recruits*."

"Yes, sir," said one of the candidates stubbornly, "but what happens *if* we fail?"

The colonel looked him in the eye, noting the stubborn set of jaw, and the direct gaze. This was the man who earlier had looked as if he would like to knock the colonel's head off.

"*If* you fail," said the colonel, "I will think you failed *on purpose*."

"Then what happens?"

There was a silence, with all the other candidates listening alertly.

"*If* I think a candidate has failed on purpose, I have discretion to do quite a number of things—whichever one strikes me as suitable. These tests are very hard to fail on purpose. They are so designed that it goes against the grain to fail them. To fail them *in a certain way* demonstrates that you have the ability to pass them. To fail in another way automatically ends the series. We aren't bound by many iron rules in the Patrol. I will do what I think best. Why? What's wrong?"

"You promised to tell us how we'd take care of the guerrillas."

There was a murmur of agreement.

The colonel reached into an inner pocket of his uniform jacket, and drew out a small transparent container holding what looked like a thick crayon.

"What does that look like to you?"

"A marking crayon."

"That's what it is. But it's made of a very special compound, that we call 'special tar.' "

"What does it do?"

"I'll tell you, but only on the understanding that whoever hears the information will get set down on whatever planet, or in whatever place, we choose to set him down, if he fails the tests. I can tell you that we will choose to set him down in a place where he will be unlikely to repeat the information to anyone who wants to know about it."

There was an immediate murmur of agreement. No one objected. Then there was an intense silence.

"That's understood?" said the colonel insistently.

"Yes, sir. What is this 'tar?' "

"It's the short way of saying 'transient atomic reactant.' It's also

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a kind of stuff that, when you get it stuck on you or anything else, it's hard to get off. The basic trouble on Terex isn't just the guerrillas, it's also the Skagas that you saw in operation just a little while ago. The Skagas operate the black market that supplies the guerrillas with the best Space Force weapons available, while at the same time sabotaging deliveries to Space Force troops. Now then, Terex has no industry capable of turning out these weapons. Terex is technologically backward. The guerrillas get their weapons *from the black market*. The black market *feeds* them weapons."

The colonel paused.

The troops stared at the marking crayon, which he was still holding up so they could see it clearly.

"Interstellar Investigations Corporation," said the colonel, "is going to put a tiny mark on weapons passing through Space Force Offloading Center 2. This will be done *before* these weapons pass through the reloading line. This mark will be in some out-of-the-way place. Perhaps inside the mechanism of the bolt. Perhaps under the heel plate. It will all depend on the weapon. A little bit of special tar will go on each weapon. A little bit of it goes a long way."

"And it . . . ah—You call it—"

"Another name for it is 'transient atomic reactant.' I will quote the explanation as the head of S-Branch stated it to me:

" 'This is a "fibrogravitic quasiclathrate." The gravitic component is inherently unstable. The basic active ingredient is composed of particles which might be called "nuclear catalyst," as they create rapid nuclear breakdown with a partially sustaining regenerative action. The containing of this basic ingredient, the nuclear catalyst, so-called, is the function of the gravitic compound of the fibrogravitic quasiclathrate. Obviously, such a nuclear catalyst can't be mixed in with a little glue, to stick it to whatever you want, since the catalyst would immediately destroy the nuclei of the glue. Therefore, the catalyst is held in very tiny gravitostrictive "bottles," that look like minute bits of sand in the tarry-appearing adhesive. Since no adhesive will stick to a directed gravitic field, a very fibrous substance is used to imprison the "grains." Now, the grains don't remain imprisoned forever, or the compound wouldn't be worth much. The directed gravitic field of the grains is inherently unstable, and breaks down. This releases the "nuclear catalyst." It is possible to predict *when* the inherent instability will result in breakdown, release of the "catalyst," and consequent explosion of closely adjacent materials. The force of the explosion then depends on the nature and the density of the adjacent atoms. The time of the explosion can be predicted accurately.' "

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There was a silence as the colonel finished speaking, then a slow exhaling of breath.

"We will," said the colonel, "naturally put a warning sticker on every keg, drum, barrel, and other container that leaves the loading center. We will circulate warnings locally. But, the Skagas and black marketeers being as they are, there's a question whether these warnings will do them much good. Of course, we aren't going to give them all the details. Perhaps they will choose to ignore the warnings. We will, naturally, warn the Space Force commanders, and they will pay attention; but if the Skagas and the guerrillas run true to form, the Space Force probably won't see too many of these weapons. For good measure, the special tar is timed for one of the local feast days. Naturally, no religious person will be working on that day, so the supply dumps *should* be deserted. If the black marketeers, guerrillas, and their hangers-on happen to be looting the supply dumps on the same day that the tar goes off, that just shows what they get for being irreligious. I'm sure no religious person on the planet should object too strongly. And afterward, I don't think there will be too many irreligious ones left."

The colonel glanced at the stubborn candidate, who was now smiling.

"Any further questions?"

"No, sir. If I fail the tests, just dump me off in empty space. I'm happy."

As the colonel hoped, but hardly dared expect, all the candidates passed the tests, though some of them only barely squeaked by the fifth and last test. As each batch passed, the colonel put them to work at the offloading center, where the Terexian loaders had a good laugh at the seal that was now stuck on each reloaded crate, keg, barrel, and drum:

WARNING!
Not For Unauthorized Hands!
Contents of
This Container Protected
Against Unauthorized Use
By
INTERSTELLAR
INVESTIGATIONS
CORPORATION
Danger!
EXTREME PERIL!
BEWARE!

For good measure, the colonel had a number of small signs put up along the reloading line, in such locations that the thieves who worked on the line could not possibly miss them:

NOTICE

This installation has been THIEFPROOFED by the INTERSTELLAR INVESTIGATIONS CORPORATION. You are being watched. No one

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profits by criminal activity. Crime does not pay. Do not imagine that *you* will get away unpunished, if you try to do the very things, such as pilferage, shoplifting, looting, and other such activities that the INTERSTELLAR INVESTIGATIONS CORPORATION has broken up on other worlds. You cannot succeed. Be honest. You will find that there will be a great reward for honesty. And a great punishment for dishonesty.

The result of these two notices was that there were reports from all the Space Force receiving supply centers that *no* shipments from Offloading Center 2 were now being received. The whole output was being robbed.

The colonel now coerced the commanding officer of the center into issuing a statement on the situation:

It has come to the attention of Space Force authorities charged with the distribution of supplies to the forward troops that, probably purely by accident or misunderstanding, some quantity of the deadly weapons and implements of war may have fallen into unauthorized hands. It has even been rumored that religious feast days have been violated for the purpose of making unauthorized entry into places of storage for military supplies, and there making illegal depredations upon such supplies. Without wishing to state a definite position regarding the truth or falsity of these allegations, it must be stated that, if true, this would constitute an extremely serious and dangerous situation. Space Force supplies are sometimes of an extremely volatile nature. Many of these supplies are actually dangerous explosives. All of our weapons have entered this world at the express permission of the Priestly Authorities. To steal or possess them, to consort with those who steal or possess them, to violate holy days, all this would appear to be very dangerous, and not merely because it challenges the worldly authority of the Space Force, which has come to this planet in reply to a call for help. It is well known that Evil Recoils Upon The Doer. It is to be hoped that those who wish to escape Retribution will number themselves amongst the Righteous.

The result of this statement was merriment amongst some of the workers, but also an immediate drop in the number of workers on the reloading lines, followed by their replacement by a crew that gave cold chills to any ordinary citizen who showed up, innocently looking for a job.

Meanwhile, the military situation was going from bad to worse. Or-

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dinary Terexians had by now come to regard all humanity roughly in the light of a well-intentioned but stupid child, a viewpoint that was cheerfully brought home at a gathering on the afternoon of the very day that the remaining stability of the transient atomic reactant dwindled down into the minutes and seconds.

"I must confess," said the host, a prominent Terexian by the name of Swelnior, "that you Earth people have shown yourselves incredibly naïve. The thought of appealing to the good will of *Skagas*—" He chortled delightedly.

The colonel, wearing an improved version of the prickly suit he'd had the first day on the planet, experienced a faint chill as he looked at his watch.

"Pardon me, Mr. Swelnior—"

"Ho, ho, my dear fellow, it's precisely *you* who have been the most . . . do forgive me . . . ridiculous. To appeal to *Skagas*—"

"The appeal," said the colonel coldly, "was to whoever might choose to *dissociate* himself from the Skagas."

"You people came to the planet like some sort of divine heavenly beings with supernatural powers . . . forgive me if I speak frankly; it's my nature . . . and bit by bit you have gradually come down until now we can see you as . . . as *children*."

Across the table, a prominent Terexian laughed.

"Not children. But *Puppies*."

"I hope," said the colonel, his voice cutting through the merriment, "that none of you gentlemen have trafficked with the Skagas or the black marketeers."

"I like that word—'trafficked.' It has a quaint archaic tone. Really, now, Mr. . . . what's the name . . . Fishee? Really, Mr. Fishee—"

"Because there might just be time for you to—"

"His name is 'Fish.' You know, the things we Terexians catch and eat."

". . . Might just be time for you to clear a few valuables away from black market—"

"Oh, yes, before the Hour of Retribution?"

Down the table, a Terexian priest looked up. His eyes lit with a glow of fanaticism.

"Do I hear someone *joke* about the Hour of Retribution?"

Swelnior leaned forward, smiling.

"Surely, we need not fear Retribution from—" He inclined his head toward the humans in the room.

The Terexian priest looked at the colonel, then at Swelnior. He picked up his chair, and walked around the table to seat himself beside the colonel, who, with the other humans, had a considerable space between him and the nearest Terexians. Ignoring Swelnior, the priest looked at the colonel. "If I read your face rightly, Mr. Fisher, the balance has tilted too far, and

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the evil that has been done is about to be righted by the Sword of Justice. You are, I see, a soldier."

The colonel recovered from the shock, and groped for a reply. But the priest had already turned toward Swelnior.

"You sack of wormy swine, do you imagine that one of the Faith will join in your folly? You, with the wisdom of a block of sawn wood, the polish of a lump of sandstone, and the self-discipline of an eel two days dead and afloat in scum, you dare invite the Select of the Faith to ape your depravity?"

There was a stunned silence. Swelnior opened his mouth.

"See here—"

"None of that. You have had the power and misused it. The accumulated worth of past deeds is used up, and you have forgotten how you came to where you are. Know then that there is a weight in the lives of men which, set in motion, overcarries, however the later acts of a man may seem to mock it. But it is only for a moment in the eyes of those who know. Now prepare to eat the ripened fruit that you have raised in your orchard."

Swelnior turned pale, and looked around at the others. Most of them looked shaken. A few sat with outthrust jaws and steady gaze.

The priest looked up.

"I feel it come."

The colonel glanced at his watch.

The room moved as if they were on a ship that swayed around them. Ornate water glasses slid and spilled. A heavy spiked candleholder smashed down on the table.

The roar seemed to go on forever.

It came to the colonel that the Skagas had had some backing that he hadn't known about. This meeting was being held in an exclusive section of the capital city. From the roar and the shooting flames, it was obvious where a part of Mr. Swelnior's wealth had come from.

Swelnior himself was frenziedly shouting. The bulk of the guests were screaming as chunks of plaster and ornate stone blocks smashed to the floor. The priest was looking on with a grim smile. The air was full of plaster dust, glowing pink from the flames glaring in the window. Major Brouvaird, from the Offloading Center, emerged from under the table with the other Space Force officers, stared around, and let loose a string of awed profanity.

". . . The guerrillas?"

A younger officer said urgently, "How do we get *out?*"

There was a sizzling, cracking sound, the flames vanished, and a cloud of white vapor steamed up past the window. An instant later, the Interstellar Investigations ship loomed through the mist, dangling a flexible ladder, and an amplified voice boomed orders to climb onto the ladder. The Terexian priest seemed slightly disappointed by the

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rescue, but everyone else reacted with enthusiasm.

Once on the ladder, the ship swung away from the side of the building, where the flames were again starting to spring up, and now the rest of the city, the hills on three sides, and the bay on the fourth, came into view.

One whole section of the city was in flames, and from here and there in the surrounding wooded hills, sizable clouds of dust and smoke climbed up. In the exclusive hill section of the city, Swelnior's house and two or three others nearby were a shambles.

As the ship set them down, all the Terexians at once crowded around the priest, anxiously seeking guidance. The priest was giving it to them in no uncertain language as the colonel, Major Brouvaird, and the other Space Force and "Interstellar Investigations" men looked around.

"That column of smoke," said the Space Force major, "is the storehouse we built at the near end of the coastal canal. The damned pirates looted the place every feast day." He stared at the hills. "That biggest column of smoke—where you can see flames shooting up—corresponds with the location of a guerrilla supply dump they've been rumored to have been building up." He looked at the colonel again. "If what we can see from here is typical, the Skagas and the guerrillas have just gotten the stiffest jolt of the war. Do you mind if I ask what hit them?"

"Interstellar Investigations," said the colonel gravely, "has its methods."

"Ah," said the major, going along with the joke, "but I thought Interstellar Investigations was hired to *detect* who was robbing the supply system."

"That was the problem."

The major looked around at the towering clouds of smoke.

"But—"

"Those that blew up," said the colonel politely, "were guilty. We detected the criminals by seeing *who got punished by his crime.*"

Off in the distance, the Interstellar Investigations ship, having perhaps got special permission of the priesthood to use gravitors on this desperate occasion, had warped a huge column of water up out of the bay on a gravitor beam, and was dumping it on the burning section of the city.

The Space Force major wrestled with the colonel's comment.

"But—"

"When you want to see who's stealing all the cookies from the cookie jar," said the colonel, "you can make up a batch filled with red pepper. It has the virtue of detecting the criminal, punishing him for his crime, giving him second thoughts for the future, and just possibly raising his respect for the chef."

A number of highborn Terexians,

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looking pale and greenish, passed by the humans with markedly respectful bows.

The major's eyes widened as the idea hit him, and as it dawned on him how much he still didn't know.

Down in the city now, the holocaust had been reduced to a towering column of steam. The ship came back again, again lowering its ladder, but this time booming out instructions that only "Interstellar Investigations" personnel should climb aboard.

"*Interstellar* Investigations," said the major dazedly, as the last deduction added itself up in his mind. With a sensation like a stiff jolt to the midsection, he realized what he'd really been dealing with.

The colonel, climbing swiftly, was now almost up to the ship. He waved good-bye just before he climbed in.

The major recovered his self-possession and threw a salute. There, at least, was an organization PDA couldn't touch, and that knew you didn't gain respect and cooperation by letting yourself be jumped on. *There* was an outfit that did things *right!*

The colonel stepped into the ship, and watched as the fake outer hatch swung shut. He shook his head, and stepped in through the massive hatch of the real ship. There had been a mess if he ever saw one. He'd almost got himself and some valuable recruits killed by going to Swelnior's meeting, and the fact was inescapable that a number of innocent people, *hopefully* a small number, had got blown up along with the black marketeers and guerrillas. On the other hand, Space Force casualties should go down where they should have been in the first place, and if PDA didn't commit some new piece of stupidity, it might be possible to have peace on the planet for a while. Meanwhile, he'd picked up thirty-one highly promising recruits, and, when he got back, Roberts, Hammell, Morrissey, and Bergen should just be getting back from Basic. Maybe then it would be possible to get things straightened out so they could do things *right* for a change.

With these thoughts filling his mind, the colonel almost smashed into the highly polished, practically invisible column at the center of the ship. He had scarcely recovered when a shout came down from overhead:

"Colonel! The Chief's on the screen!"

The colonel thrust through the jammed recruits, and started up the grav-shaft.

It *would* be nice to have things the way they should be.

But something told him there would be a slight delay first. ■

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High-G Stress

The high-G stress of a rocket ship takeoff for orbital flight is generally considered somewhat of a stress running around 12G max. But the extremely high-G stresses involved in quite ordinary events aren't so obvious. But they're important to modern electronics, as witness the following from a G.E. manual dealing with transistor handling:

Semiconductor material is hard and brittle, and can be damaged by high impact shock. For example, dropping a transistor 4½ inches onto a hardwood bench top subjects the device to around 500G; a drop of 30" onto concrete may increase the shock to from 7,000 to 20,000G. Snapping a transistor into a clip causes a shock of 600G, while the simple act of clipping off a transistor's leads can produce a shock wave of several thousand G.

Some kinds of transistors are exceedingly delicate with respect to another type of shock—rather surprisingly for an electrical device, they can't stand electric shocks.

Some types of field-effect transistors have input resistance of thousands of millions of ohms; like most transistors, they're relatively low-voltage devices, usually having peak voltage limits of about 50 volts—which seems a quite reasonable value.

Yet these devices are sold with their three lead wires welded together at their ends, are installed in the intended circuit with the lead ends still welded, and the ends clipped free only after being soldered in circuit.

With a resistance of thousands of millions of ohms, slipping a plastic sleeve over the lead wire usually ruins the transistor; brushing it against a piece of cloth can destroy the transistor—because the static electricity induced can produce voltages far in excess of the 50-volt limit!

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the ghoul squad

Man's great advance beyond the computer is that Man can be illogical but rational, where the computer is merely logical. The trouble is he can also—unlike a computer!—be both illogical and irrational.

HARRY HARRISON

Illustrated by Leo Summers

I

"Look at them," Patrolman Charlie Vandeen said, jerking his thumb towards the gray vehicle parked on the other side of the road—then spitting in the same direction. "Just sitting there like vultures waiting for their pound of flesh. Vultures."

"The ITB have a job to do and

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they're doing it," Doc Hoyland said, pushing his fingers up under the back of the girl's jaw to find the fluttering pulse. "What did the ambulance say, Charlie? How long will they be?"

"Ten minutes more at least. They were way on the other side of town when the call came in." He looked down at the girl stretched out on the ground, at the thin limbs and cheap cotton dress, stained now with blood, and the bandage that covered her head like a turban. She was young, almost pretty: he turned away quickly and the gray bulk of the ITB wagon was still there.

"The ITB!" the young patrolman said loudly. "You know what people call them, Doc?"

"The Isoplastic Transplantation Bank . . ."

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"No, you know what I mean. They call them the Ghoul Squad, and you know why."

"I know why, and I also know that is no way for a law officer to talk. They've got an important job to do." His voice changed as he pressed tighter, groping for the vanishing flutter of the pulse, weaker than a dying butterfly's wing. "She's not going to make it, Charlie, ambulance or no. She didn't bleed much but . . . half her brain is gone."

"There must be something you can do."

"Sorry, Charlie, not this time." He pulled the loose collar of her dress down and felt around the back of her neck. "Make a note for the record that she is not wearing a necklace and that there is no medallion."

"Are you sure?" the patrolman asked, flapping open his notebook. "Maybe it broke and fell down her dress . . ."

"Maybe it didn't. The chains are made of metal. Do *you* want to look?"

Although he was in his thirties Charlie was still young enough to blush. "Now don't go getting teed off at me, Doc, that was just for the record. We have to be sure."

"Well, I'm sure. Write that down, and the time, and what you see for yourself." He stood and waved his arm. The gray ITB truck tumbled to life and started over to them.

"What are you doing, Doc?"

"She's dead. No pulse, no respiration. Just as dead as the other two." He nodded towards the still smoking wreck of the pickup truck. "It just took a few minutes longer. She was really dead when they hit that tree, Charlie. There was never any chance."

Behind them the heavy tires braked to a stop and there was a slam as the rear door of the vehicle was thrown open. A man jumped down from the cab: the initials ITB in neat white letters were on the pocket of his gray uniform, the same gray as the truck. He spoke into a hand-recorder as he approached.

"Eight April, 1976, on State Highway 34, approximately seventeen miles west of Loganport, Georgia. Victim of an auto wreck, female, caucasian, in her early twenties, cause of death . . ." he paused and looked up at Dr. Hoyland.

"Massive brain trauma. Almost the entire left frontal lobe of the cerebrum is gone."

As the driver came around the truck, snapping open a folding stretcher, the first ITB man turned to the patrolman.

"This is now a medical matter, Officer," he said, "and no longer a police concern. Thanks for your help."

Charlie had a quick temper. "Are you trying to get rid of me—"

Doc Hoyland took him by the

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arm and turned him away. "The answer is yes. You have no more business here now than you have in, well, in an operating theater. These men have a job to do, and it must be done quickly."

Charlie's mind was made up for him as he heard the approaching wail of the ambulance. He went to flag it down and his back was turned as they bent and cut the clothes from the girl's body. Working quickly now they placed the corpse onto the stretcher and drew a sheet of sterile plastic over it. A heavy curtain covered the open rear of the vehicle and they raised the bottom a bit to slide the stretcher under it.

When the patrolman turned back the men were already swinging the doors shut. At his feet was the blanket from the patrol car, speckled with the girl's blood and littered with the crumpled rags that had been her garments. A puff of vapor rose from a vent on top of the gray vehicle.

"Doc . . . what are they doing in there?"

The doctor was tired. He had had very little sleep the night before, and his temper was getting short.

"You know just as well as I do what they are doing," he snapped. "The ITB does a good job and a vital one. Only fools and crackpots think differently."

Charlie said *ghouls* as he started to the car to radio a report, but he didn't say it loud enough for the doc to hear.

II

This Christmas, in the year 1999, was really one for celebrations. Something about the new century being just a few days away seemed to excite everyone, that and the general prosperity and the tax cut that had been President Greenstein's holiday present to the entire country. What with Christmas falling on a Monday this year and the 26th now being an official holiday as well, the four-day weekend had been a very, very merry one. Someone had said that all the corn liquor drunk in this one county would have floated a battleship and he was probably right, if it was a small battleship.

Sheriff Charlie Vandeen was nowhere near as tired as his deputies. In fact, he had to admit, he wasn't tired at all. He had not been home since the fire on the night of the 23rd, but that didn't mean much. He had a cot in the room behind his office and he slept there, just as comfortably as in his bachelor apartment. His deputies knew where to find him in an emergency and that was good enough most of the time. Anyway, it hadn't been that kind of a holiday weekend, nothing really big, just a lot of everything little. Fires and drunks and fender benders, fights and noisy parties.

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Sheriff Charlie had had a good sleep. Now, showered and shaved and wearing a clean, pressed uniform, he looked out at the foggy drab dawn of December 26th and wished the whole blamed holiday was over and people were back to work. The birthday of the Prince of Peace, the reverend had said that in church during the midnight service, when Charlie had looked in, which was his duty but not his pleasure. People sure had funny ideas how to celebrate that kind of birthday. He yawned and sipped at the steaming black coffee. Off in the distance there was a growing rumble; he looked at his watch. The morning hoverliner from the Bahamas, right on time.

Leaning back in the chair he unconsciously slipped into a familiar daydream. Something he always hoped to do. The drive to Macon, to the big hoverterminal on the Ocmulgee River outside of town. His bag whisked away, then up the gangplank into the arena-sized hoverliner. He'd be in the Topside Bar when they left, he'd seen enough pictures of it to know just what it would be like, looking down at the world rushing by. He'd have a mint julep first, to celebrate his leaving, then Jamaica rum punch to celebrate the holiday ahead. He would sit up there, king of the castle, getting quietly wiped out while the pine slashes and swamps whooshed by below. Then the beach and the blue ocean and the golden islands ahead, the luxury hotel and the girls. In the daydream he always had a nice bronze tan when he walked out onto the beach, and he was a good bit younger. The gray streaks were gone from his hair and his gut was a good fifteen inches smaller. When the girls looked at him . . .

Through the reverie he was suddenly aware that the distant rumble had stopped. At the same moment the sky, above the low-hanging fog, lit up in a sudden rosy glare.

"Oh, my God," he said, standing, unaware that the chair had fallen over backward and that the cup had dropped from his fingers, crashing on the floor. "Something's happened to it."

The hovercraft was foolproof, that's what they said, floating safely on a cushion of air, moving over land or water with equal ease. If, for some unaccountable reason, the engines should fail, they were supposed to simply sink down, to float or stand until they could move again. They were supposed to. There still had been some close calls, collisions and the like. When something the size of an ocean liner rushes along at over one hundred fifty miles an hour accidents are always possible. It looked like the laws of chance had finally come up with a zero. Luck had run out. He reached for the phone.

While a deputy alerted the cars and the new ambulance service,

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fire department as well, he verified the fact that a hoverliner, in this area, did not answer their call signal. He reported what he had seen and heard and hung up. He still hoped that his suspicions were wrong, but it was a very slight hope.

Jamming his hat on his head he kicked into his high-heeled boots at the same time, then ran for the door grabbing up his raincoat and gun belt on the way. Unit Three was parked at the curb outside and Ed Homer was dozing over the wheel. He jerked awake when the sheriff climbed in next to him: he hadn't heard the explosion. As they pulled away Charlie sent out an all-units alarm. There was no telling what they would find out there. He still hoped that he was wrong, but by now it was a mighty small hope.

"Do you think it hit in the swamp, Sheriff?" Ed asked, flooring the turbine and burning rubber down the highway.

"No, wasn't far enough west from what I could tell. And if it was, we couldn't reach it in any case. I think it's still in the Cut."

"I'll take Johnson's road out, then the farm road along the Cut."

"Yeah," Charlie said, buckling on his gun.

It was full daylight now, watery and gray, but they still needed their lights for the patches of fog. They braked and broadsided into the side road and Ed touched the siren to pull over a lumbering milk truck on collection rounds. After that it was a straight run to the Cut, the broad highway through the pines that the hovercraft used. Grain couldn't be grown here, the downblast from the air cushion blew the kernels from their stalks, and grazing animals panicked when the big craft passed. A cash crop of grass for fodder was still possible, and the Cut was an immensely long meadow before it ran into the swamp. The cruiser bumped along the dirt track the harvesters used and there, dimly seen through the rising fog, was a boiling column of black smoke.

Ed Homer, wide-eyed, automatically took his foot from the accelerator as they came close. The hoverliner was gigantic in death, cracked open and smoking, tilted up where it had nosed into the trees after dragging an immense raw furrow for five hundred yards through the field.

They drove slowly towards it, passing great tumbled sheets of black skirting torn from the bottom of the liner. People were climbing out of the wreck, lying in the grass, helping others to safety. The car braked to a stop and when the turbine died they could hear the cries and shocked moans of pain.

"Get on the network and tell them exactly where we are," the sheriff said, throwing open the door. "Tell them we're going to need all

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the medical aid they can find. Fast. Then help to get those people clear."

He ran towards the wrecked liner, to the people sprawled on the ground. Some of them were burned and bloody, some of them obviously dead, some of them uninjured though still numb from the sudden shock. Two men in uniform carried a third: his right leg hung at an impossible angle and there was a belt about his thigh that cut deeply into the flesh. He stifled a moan as they put him down before turning back to the wreck. The sheriff saw that the man was still conscious, though his skin was parchment white under the bruises and oil smears.

"Is there any chance of more fire or explosion," he asked the man. At first the officer could only gasp, then gained a measure of control.

"Don't think so . . . automatic extinguishers kicked in when the engines blew. That's under control. But there is sure to be fuel leakage. No smoking, open fires, must tell them . . ."

"I'll see to that. Just take it easy, the ambulances are on the way."

"People inside . . ."

"We'll get them out."

The sheriff started towards the looming wreck, then stopped. The crew and male passengers seemed to be organized now. People were being helped to safety, even carried out on stretchers. It was more important for him to wait here for the assistance that would be arriving soon. He went back to the car and flicked the microphone switch from radio to bullhorn.

"May I have your attention, please." He twisted the volume up full and heads turned as his amplified voice rolled over them. "This is the sheriff speaking. I've called in medical aid and they'll be arriving at any moment now. I have been told that there may be fuel leakage and danger of fire—but there is no fire now. But do not smoke or light matches . . ."

There was a fluttering roar from behind him, growing louder. A copter, a big multirotor one. This would be the ambulance people. Dust rolled out as the machine dropped close by and he put his back to it. When the blades slowed he turned to look. It was gray from nose to tail and Sheriff Charlie Vandeen felt that same hot needle of anger that had not lessened after all the years. He ran towards it as the entranceway dropped down.

"Get back inside, you're not wanted here," he called out to the two men who were hurrying down. They stopped, surprised.

"Who are you?" the first man asked. His hair, beneath his cap, was almost the same gray as the rest of his uniform.

"I'm the sheriff. You can read, can't you?" He tapped at his badge, at the large clear letters, black on

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gold, but his fingers only brushed against the fabric of his shirt. Surprised, he looked down at the empty place on his pocket. When he had put on a clean uniform he hadn't changed his badge from the old one.

"You heard what I said," he called out to the men who had passed him while his attention had been on the missing badge. "The Ghoul Squad isn't needed here, not in my county."

The older man turned and looked back at him coldly.

"So you are that sheriff. I know about your county. Nevertheless we are doctors and since there are no other medical personnel present we intend to function in that capacity." He looked down at the sheriff's hand which rested on his pistol butt. "If you intend to fire upon us for doing that, you will have to shoot us in the back." He turned and both men started walking quickly toward the wreck.

The sheriff pulled his gun up a bit, then cursed and shoved it back. All right, fine, they were doctors. Let them act like doctors for once. That was O.K. by him.

Sirens sounded down the Cut and there were more copters coming in low over the trees. He saw Ed Homer helping a woman from the wreck and almost went to help, until he realized that he could do far more out here. Every kind of assistance would be arriving now and they would need organizing if they weren't to start falling over each other. The Fire Department pumper was bouncing across the field and they ought to get right up against the wreck to make sure there would be no fires. He ran out and waved to them.

Bit by bit organization replaced confusion. The unhurt passengers were guided from the area and the medical teams went to work on the wounded. Two local doctors had heard the call on the emergency network and had been temporarily drafted into the teams. One of them was old Doc Hoyland, in his seventies now and semiretired, who still rushed out like a firehorse when he heard the bell. He was needed today.

There was a growing row of figures covered with blankets that the sheriff glanced at once then turned away. When he did this he saw two men in gray carrying a stretcher towards their copter. In sudden anger he ran towards them, to the base of the entranceway.

"Is that man dead?" he asked, glancing quickly at the gaping mouth and staring, unmoving eyes. The lead stretcher bearer looked at the sheriff and almost smiled.

"Are you kidding? That's the only kind we ever go near. Now get out of the way—"

"Take him and put him with the other victims." Charlie touched the butt of his revolver, then grabbed it firmly. "That is an order."

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The men hesitated, not knowing what to do, until the rear bearer said, "Set," and they put the stretcher on the ground. He thumbed his pocket radio to life and talked quickly into it.

"Over there," the sheriff said, pointing. "I mean it and I'm playing no games." The men bent reluctantly just as the ITB doctor, whom the sheriff had first talked to, came hurrying up. There were two state troopers with him, both of whom the sheriff knew by sight. The sheriff spoke even as the doctor opened his mouth.

"You better load your ITB ghouls back aboard, Doc, and get out of here. There's going to be no hunting on my game preserve."

The doctor shook his head, almost sadly. "No, it is not going to be that way at all. I told you that we knew about you, Sheriff, and we have been avoiding trouble by keeping our units from entering your area of jurisdiction. We do not wish any public differences of opinion. However, this time we have no recourse but to make our position clear. The ITB is a federal agency established by federal law and no local authorities may interfere with it. We cannot create a precedent here. Therefore, I must ask you to stand aside so that these men may pass."

"No!" the sheriff said hoarsely, color flooding his cheeks. "Not in my county . . ." He stepped back, his hand still on his gun as the two state troopers approached. The first one nodded at him.

"What the doctor says is right, Sheriff Vandeen. The law is on his side. Now you don't want to cause yourself any trouble."

"Step back!" the sheriff shouted, pulling at his gun, a loud roaring in his ears. Before it slid clear of the holster the two troopers were there, one on each side, holding him firmly. He struggled against them, gasping in air, trying to ignore the growing pain in his chest. Then he slumped forward suddenly, a dead weight.

The ITB doctor had the sheriff flat on the ground and was bent over him when Dr. Hoyland hurried up.

"What happened?" he asked, slipping his stethoscope from his pocket. He tore open the sheriff's shirt and put the pickup against his chest while he listened to the explanation. He opened his bag and gave the prone man a swift injection.

"Just what you might have expected," he said, struggling to stand. A trooper helped him to his feet. His face was as wrinkled as a hound dog's and had the same solemn expression. "But you can't talk to Charlie Vandeen. Angina pectoris, he's had it for years. Progressive heart deterioration. He's supposed to take it easy, you see how well he listens to me." A fine rain, no heavier than mist, was beginning to fall. The doctor drew his

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chin down inside his coat collar like an ancient turtle. "Get him out of this," he ordered.

The ITB men put the corpse aside and gently placed the sheriff onto the stretcher. They carried it into their copter and the two doctors followed. Inside the body of the copter there was a narrow corridor formed by the curved inner wall and a partition of thin transparent plastic sheeting that stretched when they pressed against it. The sheriff was breathing hoarsely, laboriously, and his eyes were open now.

"I have been after him for the last five years to have a heart transplant. The one he's got is not strong enough to pump soda pop." Dr. Hoyland looked down, frowning grimly, while one of the stretcher bearers covered the sheriff with a blanket, up to the shoulders.

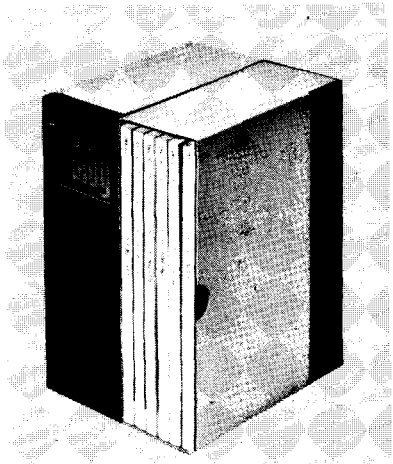
"He wouldn't do it?" the ITB doctor asked.

"No. Charlie has a thing about transplants and the ITB."

"I have noticed that," the doctor said, dryly. "Do you know why?"

The voices were distant, garbled hums to Charlie Vandeen, but his eyes worked well enough. He saw the two men carrying a stretcher with a man's body on it. They pushed it against the plastic wall which parted like a great obscene mouth and drew it in. It was now in a small room walled with plastic where a man waited, dressed and masked in white. He stripped the body nude in an instant, then sprayed it all over with a nozzle hooked to a tank on the wall. Then, dripping with fluid, the corpse was rolled onto a plastic sheet and pushed through the other wall of this cell into the larger inside room.

Here the ghouls waited. Charlie did not want to look but he could not stop himself. On the table. A single practiced cut opened the body from sternum to pubis. Then dissection began. Something was removed from the gaping wound and, with long tongs, dropped into a container. Fumes rose up. Charlie moaned.



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Dr. Hoyland nodded. "Of course I know why Charlie acts this way. It's no secret, it's just that nobody talks about it. He had a shock, right in the family, when he had just joined the state troopers. His kid sister, no more than sixteen as I remember, driving home from some school dance. Bunch of wise-acre kids, a hotrod, some moonshine, a crackup, you know the story."

The ITB doctor nodded, a little sadly. "Yes, I do. And her medallion . . . ?"

"She left it home. She was wearing her first party dress, low neck, and it showed."

Through a thickening haze the sheriff saw something else, red and dripping, taken from the body and put into the box. He groaned aloud.

"It's going to take more than that shot," Dr. Hoyland said. "Do you have one of those new portable heart-lung machines here?"

"Yes, of course, I'll get it rigged." He pointed to his assistant who hurried away. "I cannot blame him for hating us, but it is all so useless. When the immune response was finally overcome in the Seventies there were just no organs and limbs available for the people who desperately needed them. So Congress passed the ITB law. If people do not want their bodies used to benefit others, they simply wear a medallion that states this fact. They will never be touched. The act of not wearing a medallion means that the person involved is ready to donate whatever parts of his body may be needed. It's a fair law."

Dr. Hoyland grunted. "And a tricky one. People lose medallions or never get around to getting them and so forth."

"Here comes the machine now. It's a very just law. No one loses by it. Most of the religions—as well as the atheists—agree that the body is just so much inert chemicals after death. If these chemicals can benefit mankind where is the argument? The ITB takes the bodies without medallions and removes the parts that we know are vitally needed. They are frozen in liquid nitrogen and go into banks all over the country. Do you think that the healthy kidney you just saw would be better utilized decomposing in the ground, rather than give some dying citizen a long and happy life?"

"I'm not arguing. Just telling you how Charlie Vandeen feels. A man has a right to live, or die, his own way I've always believed."

Grunting with the effort he bent and readied the machine to preserve the life of the dying sheriff.

"N-no . . ." the sheriff gasped. "Take it away . . ."

"You're going to need this to save yourself, Charlie," Doc said softly. "This will keep you alive until we get you back to the hospital. We'll put a new pump in you then

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and you'll be good as new in a couple of weeks."

"No," the sheriff said, louder now. "Not to me you don't. I live and die with what God gave me. Do you think I could live with parts of someone else's body inside me? Why"—impotent tears filled his eyes—"you might even be giving me my own little sister's heart."

"No, not after all these years, Charlie. But I understand." He waved away the man with the heart-lung machine. "I'm just trying to help you, not make you do anything wrong."

"You . . . better not, Doc. You're a good man, good friend . . . but you got a lot of wrong ideas . . ."

The sheriff seemed to have trouble talking now. The right corner of his mouth was pulled up in an unnatural half-smile, while the eye above it was closed.

"You just can't refuse to use the heart-lung machine," the ITB doctor insisted.

"It was not my choice to make," Dr. Hoyland said. He listened carefully through his stethoscope, then folded it up and put it away. "In any case the decision is now out of our hands. Charlie is dead."

"That does not make any difference," the other doctor said, pushing the life-sustaining machine forward again. "If we work quickly, we can avert brain damage."

"I'm afraid that it's a little too late for that as well. Charlie's been a sick man for years—and his heart is not his only trouble. Didn't you see the symptoms of paralytic stroke on his mouth and his eye?"

"I saw some slight signs, yes, but they could have been a response to the angina pains. As long as there is a chance to save the man we have to try."

"Let him be," Doc Hoyland said, moving between the sheriff's body and the ready machine. "I'm his physician and I say that he is dead. Brain damage and heart failure. He can't be revived. He wears a medallion so you don't want his body—couldn't use tissues as badly deteriorated as his anyway. And he never wanted a thing that you have to offer."

The ITB doctor hesitated, then shrugged.

"Have it your own way then. But I warn you that the responsibility is all yours and it will show that way in the records."

"That's just fine by me. No one is going to bother me, not at my age. No one's going to bother Charlie, either. But you should understand that the world is changing pretty fast—and some people just can't change fast enough to keep up with it. The least we can do for those who don't fit in it is to let them leave it."

But the ITB doctor had already turned away and did not hear. Doc reached down and pulled the blanket up over his friend's still face. ■

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jackal's meal

It is not necessary to convince an enemy
you can surely destroy him—
if he's a rational, and therefore dangerous type!

GORDON R. DICKSON
Illustrated by Leo Summers

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If there should follow a thousand swords to carry my bones away—
Belike the price of a jackal's meal were more than a thief could pay . . .

"The Ballad of East and West," by Rudyard Kipling

In the third hour after the docking of the great, personal spaceship of the Morah Jhan—on the planetoid outpost of the 469th Corps which was then stationed just outside the Jhan's spatial frontier—a naked figure in a ragged gray cloak burst from a crate of supplies being unloaded off the huge alien ship. The figure ran around uttering strange cries for a little while, eluding the Morah who had been doing the unloading, until it was captured at last by the human Military Police guarding the smaller, courier vessel, alongside, which had brought Ambassador Alan Dormu here from Earth to talk with the Jhan.

The Jhan himself, and Dormu—along with Marshal Sayers Whin and most of the other ranking officers, Morah and human alike—had already gone inside, to the Headquarters area of the outpost, where an athletic show was being put on for the Jhan's entertainment. But the young captain in charge of the Military Police, on his own initiative, refused the strong demands of the Morah that the fugitive be returned to them. For it, or he, showed signs of being —or of once having been—a man, under his rags and dirt and some surgicallike changes that had been made in him.

One thing was certain. He was deathly afraid of his Morah pursuers; and it was not until he was shut in a room out of sight of them that he quieted down. However, nothing could bring him to say anything humanly understandable. He merely stared at the faces of all those who came close to him, and felt their clothing as someone might fondle the most precious fabric made—and whimpered a little when the questions became too insistent, trying to hide his face in his arms but not succeeding because of the surgery that had been done to him.

The Morah went back to their own ship to contact their chain of command, leading ultimately up to the Jhan; and the young Military Police captain lost no time in getting the fugitive to his Headquarters' Section and the problem, into the hands of his own commanders. From whom, by way of natural military process, it rose through the ranks until it came to the attention of Marshal Sayers Whin.

"Hell's Bells—" exploded Whin, on hearing it. But then he checked himself and lowered his voice. He had been drawn aside by Harold Belman, the one-star general of the Corps who was his aide; and only a thin door separated him from the box where Dormu and the Jhan sat, still watching the athletic show.

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"Where is the . . . Where is he?"

"Down in my office, sir."

"This has got to be quite a mess!" said Whin. He thought rapidly. He was a tall, lean man from the Alaskan back country and his temper was usually short-lived. "Look, the show in there'll be over in a minute. Go in. My apologies to the Jhan. I've gone ahead to see everything's properly fixed for the meeting at lunch. Got that?"

"Yes, Marshal."

"Stick with the Jhan. Fill in for me."

"What if Dormu—"

"Tell him nothing. Even if he asks, play dumb. I've got to have time to sort this thing out, Harry! You understand?"

"Yes, sir," said his aide.

Whin went out a side door of the small anteroom, catching himself just in time from slamming it behind him. But once out in the corridor, he strode along at a pace that was almost a run.

He had to take a lift tube down eighteen levels to his aide's office. When he stepped in there, he found the fugitive surrounded by the officer of the day and some officers of the Military Police, including General Mack Stigh, Military Police Unit Commandant. Stigh was the ranking officer in the room; and it was to him Whin turned.

"What about it, Mack?"

"Sir, apparently he escaped from the Jhan's ship—"

"Not that. I know that. Did you find out who he is? What he is?" Whin glanced at the fugitive who was chewing hungrily on something grayish-brown that Whin recognized as a Morah product. One of the eatables supplied for the lunch meeting with the Jhan that would be starting any moment now. Whin grimaced.

"We tried him on our own food," said Stigh. "He wouldn't eat it. They may have played games with his digestive system, too. No, sir, we haven't found out anything. There've been a few undercover people sent into Morah territory in the past twenty years. He could be one of them. We've got a records search going on. Of course, chances are his record wouldn't be in our files, anyway."

"Stinking Morah," muttered a voice from among the officers standing around. Whin looked up quickly, and a new silence fell.

"Records search. All right," Whin said, turning back to Stigh, "that's good. What did the Morah say when what's-his-name—that officer on duty down at the docks—wouldn't give him up?"

"Captain—?" Stigh turned and picked out a young officer with his eyes. The young officer stepped forward.

"Captain Gene McKussic, Marshal," he introduced himself.

"You were the one on the docks?" Whin asked.

"Yes, sir."

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"What did the Morah say?"

"Just—that he wasn't human, sir," said McKussic. "That he was one of their own experimental pets, made out of one of their own people—just to look human."

"What else?"

"That's all, Marshal."

"And you didn't believe them?"

"Look at him, sir—" McKussic pointed at the fugitive, who by this time had finished his food and was watching them with bright but timid eyes. "He hasn't got a hair on him, except where a man'd have it. Look at his face. And the shape of his head's human. Look at his fingernails, even—"

"Yes—" said Whin slowly, gazing at the fugitive. Then he raised his eyes and looked around at the other officers. "But none of you thought to get a doctor in here to check?"

"Sir," said Stigh, "we thought we should contact you, first—"

"All right. But get a doctor *now!* Get two of them!" said Whin. One of the other officers turned to a desk nearby and spoke into an intercom. "You know what we're up against, don't you—all of you?" Whin's eyes stabbed around the room. "This is just the thing to blow Ambassador Dormu's talk with the Morah Jhan sky high. Now, all of you, except General Stigh, get out of here. Go back to your quarters and stay on tap until you're given other orders. And keep your mouths shut."

"Marshal," it was the young Military Police captain, McKussic, "we aren't going to give him back to the Morah, no matter what, are we, sir . . ."

He trailed off. Whin merely looked at him.

"Get to your quarters, Captain!" said Stigh, roughly.

The room cleared. When they were left alone with the fugitive, Stigh's gaze went slowly to Whin.

"So," said Whin, "you're wondering that too, are you, Mack?"

"No, sir," said Stigh. "But word of this is probably spreading through the men like wildfire, by this time. There'll be no stopping it. And if it comes to the point of our turning back to the Morah a man who's been treated the way this man has—"

"They're soldiers!" said Whin, harshly. "They'll obey orders." He pointed at the fugitive. "That's a soldier."

"Not necessarily, Marshal," said Stigh. "He could have been one of the civilian agents—"

"For my purposes, he's a soldier!" snarled Whin. He took a couple of angry paces up and down the room in each direction, but always wheeling back to confront the fugitive. "Where are those doctors? I've got to get back to the Jhan and Dormu!"

"About Ambassador Dormu," Stigh said. "If he hears something about this and asks us—"

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"Tell him nothing!" said Whin. "It's my responsibility! I'm not sure he's got the guts—never mind. The longer it is before the little squirt knows—"

The sound of the office door opening brought both men around.

"The little squirt already knows," said a dry voice from the doorway. Ambassador Alan Dormu came into the room. He was a slight, bent man, of less than average height. His fading blond hair was combed carefully forward over a balding forehead; and his face had deep, narrow lines that testified to even more years than hair and forehead.

"Who told you?" Whin gave him a mechanical grin.

"We diplomats always respect the privacy of our sources," said Dormu. "What difference does it make—as long as I found out? Because you're wrong, you know, Marshal. I'm the one who's responsible. I'm the one who'll have to answer the Jhan when he asks about this at lunch."

"Mack," said Whin, continuing to grin and with his eyes still fixed on Dormu, "see you later."

"Yes, Marshal."

Stigh went toward the door of the office. But before he reached it, it opened and two officers came in: a major and a lieutenant colonel, both wearing the caduceus. Stigh stopped and turned back.

"Here're the doctors, sir."

"Fine. Come here, come here, gentlemen," said Whin. "Take a look at this."

The two medical officers came up to the fugitive, sitting in the chair. They maintained poker faces. One reached for a wrist of the fugitive and felt for a pulse. The other went around back and ran his fingers lightly over the upper back with its misshapen and misplaced shoulder sockets.

"Well?" demanded Whin, after a restless minute. "What about it? Is he a man, all right?"

The two medical officers looked up. Oddly, it was the junior in rank, the major, who answered.

"We'll have to make tests—a good number of tests, sir," he said.

"You've no idea—now?" Whin demanded.

"Now," spoke up the lieutenant colonel, "he could be either Morah or human. The Morah are very, very, good at this sort of thing. The way those arms—We'll need samples of his blood, skin, bone marrow—"

"All right. All right," said Whin. "Take the time you need. But not one second more. We're all on the spot here, gentlemen. Mack—" he turned to Stigh, "I've changed my mind. You stick with the doctors and stand by to keep me informed."

He turned back to Dormu.

"We'd better be getting back upstairs, Mr. Ambassador," he said.

"Yes," answered Dormu, quietly.

They went out, paced down the

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corridor and entered the lift tube in silence.

"You know, of course, how this complicates things, Marshal," said Dormu, finally, as they began to rise up the tube together. Whin started like a man woken out of deep thought.

"What? You don't have to ask me that," he said. His voice took on an edge. "I suppose you'd expect my men to just stand around and watch, when something like that came running out of a Morah ship?"

"*I* might have," said Dormu. "In their shoes."

"Don't doubt it." Whin gave a single, small grunt of a laugh, without humor.

"I don't think you follow me," said Dormu. "I didn't bring up the subject to assign blame. I was just leading into the fact the damage done is going to have to be repaired, at any cost; and I'm counting on your immediate—note the word, Marshal—*immediate* cooperation, if and when I call for it."

The lift had carried them to the upper floor that was their destination. They got off together. Whin gave another humorless little grunt of laughter.

"You're thinking of handing him back, then?" Whin said.

"Wouldn't you?" asked Dormu.

"Not if he's human. No," said Whin. They walked on down a corridor and into a small room with another door. From beyond that other door came the faint smell of something like incense—it was, in fact, a neutral odor, tolerable to human and Morah alike and designed to hide the differing odors of one race from another. Also, from beyond the door, came the sound of three musical notes, steadily repeated; two notes exactly the same, and then a third, a half-note higher.

Tonk, tonk, TINK! . . .

"It's establishing a solid position for confrontation with the Jhan that's important right now," said Dormu, as they approached the other door. "He's got us over a barrel on the subject of this talk anyway, even without that business downstairs coming up. So it's the confrontation that counts. Nothing else."

They opened the door and went in.

Within was a rectangular, windowless room. Two tables had been set up. One for Dormu and Whin; and one for the Jhan, placed at right angles to the other table but not quite touching it. Both tables had been furnished and served with food; and the Jhan was already seated at his. To his right and left, each at about five feet of distance from him, flamed two purely symbolic torches in floor standards. Behind him stood three ordinary Morah—two servers, and a musician whose surgically-created, enor-

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mous forefinger tapped steadily at the bars of something like a small metal xylophone, hanging vertically on his chest.

The forefinger tapped in time to the three notes Whin and Dormu had heard in the room outside but without really touching the xylophone bars. The three notes actually sounded from a speaker overhead, broadcast throughout the station wherever the Jhan might be, along with the neutral perfume. They were a courtesy of the human hosts.

"Good to see you again, gentlemen," said the Jhan, through the mechanical interpreter at his throat. "I was about to start without you."

He sat, like the other Morah in the room, unclothed to the waist, below which he wore, though hidden now by the table, a simple kilt, or skirt, of dark red, feltlike cloth. The visible skin of his body, arms and face was a reddish brown in color, but there was only a limited amount of it to be seen. His upper chest, back, arms, neck and head—excluding his face—was covered by a mat of closely-trimmed, thick, gray hair, so noticeable in contrast to his hairless areas, that it looked more like a garment —a cowled half-jacket—than any natural growth upon him.

The face that looked out of the cowl-part was humanoid, but with wide jawbones, rounded chin and eyes set far apart over a flat nose. So that, although no one feature suggested it, his face as a whole had a faintly feline look.

"Our apologies, said Dormu, leading the way forward. "The marshal just received an urgent message for me from Earth, in a new code. And only I had the key to it."

"No need to apologize," said the Jhan. "We've had our musician here to entertain us while we waited."

Dormu and Whin sat down at the opposite ends of their table, facing each other and at right angles to the Jhan. The Jhan had already begun to eat. Whin stared deliberately at the foods on the Jhan's table, to make it plain that he was not avoiding looking at them, and then turned back to his own plate. He picked up a roll and buttered it.

"Your young men are remarkable in their agility," the Jhan said to Dormu. "We hope you will convey them our praise—"

They talked of the athletic show; and the meal progressed. As it was drawing to a close, the Jhan came around to the topic that had brought him to this meeting with Dormu.

". . . It's unfortunate we have to meet under such necessities," he said.

"My own thought," replied Dormu. "You must come to Earth some time on a simple vacation."

"We would like to come to Earth —in peace," said the Jhan.

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"We would hope not to welcome you any other way," said Dormu.

"No doubt," said the Jhan. "That is why it puzzles me, that when you humans can have peace for the asking—by simply refraining from creating problems—you continue to cause incidents, to trouble us and threaten our sovereignty over our own territory of space."

Dormu frowned.

"Incidents?" he echoed. "I don't recall any incidents. Perhaps the Jhan has been misinformed?"

"We are not misinformed," said the Jhan. "I refer to your human settlements on the fourth and fifth worlds of the star you refer to as 27J93; but which we call by a name of our own. Rightfully so because it is in our territory."

Tonk, tonk, TINK . . . went the three notes of the Morah music.

"It seems to me—if my memory is correct," murmured Dormu, "that the Treaty Survey made by our two races jointly, twelve years ago, left Sun 27J93 in unclaimed territory outside both our spatial areas."

"Quite right," said the Jhan. "But the Survey was later amended to include this and several other solar systems in our territory."

"Not by us, I'm afraid," said Dormu. "I'm sorry, but my people can't consider themselves automatically bound by whatever unilateral action you choose to take without consulting us."

"The action was not unilateral," said the Jhan, calmly. "We have since consulted with our brother Emperors—the Morah Selig, the Morah Ben, the Morah Yarra and the Morah Ness. All have concurred in recognizing the solar systems in question as being in our territory."

"But surely the Morah Jhan understands," said Dormu, "that an agreement only between the various political segments of one race can't be considered binding upon a people of another race entirely?"

"We of the Morah," said the Jhan, "reject your attitude that race is the basis for division between Empires. Territory is the only basis upon which Empires may be differentiated. Distinction between the races refers only to differences in shape or color; and as you know we do not regard any particular shape or color as sacredly, among ourselves, as you do; since we make many individuals over into what shape it pleases us, for our own use, or amusement."

He tilted his head toward the musician with the enormous, steadily jerking, forefinger.

"Nonetheless," said Dormu, "the Morah Jhan will not deny his kinship with the Morah of the other Morah Empires."

"Of course not. But what of it?" said the Jhan calmly. "In our eyes, your empire and those of our

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brothers, are in all ways similar. In essence you are only another group possessing a territory that is not ours. We make no difference between you and the empires of the other Morah."

"But if it came to an armed dispute between you and us," said Dormu, "would your brother Emperors remain neutral?"

"We hardly expect so," said the Morah Jhan, idly, pushing aside the last container of food that remained on the table before him. A server took it away. "But that would only be because, since right would be on our side, naturally they would rally to assist us."

"I see," said Dormu.

Tonk, tonk, TINK . . . went the sound of the Morah music.

"But why must we talk about such large and problematical issues?" said the Jhan. "Why not listen instead, to the very simple and generous disposition we suggest for this matter of your settlements under 27J93? You will probably find our solution so agreeable that no more need be said on the subject."

"I'd be happy to hear it," said Dormu.

The Jhan leaned back in his seat at the table.

"In spite of the fact that our territory has been intruded upon," he said, "we ask only that you remove your people from their settlements and promise to avoid that area in future, recognizing these and the other solar systems I mentioned earlier as being in our territory. We will not even ask for ordinary reparations beyond the purely technical matter of your agreement to recognize what we Morah have already recognized, that the division of peoples is by territory, and not by race."

He paused. Dormu opened his mouth to speak.

"Of course," added the Jhan, "there is one additional, trivial concession we insist on. A token reparation—so that no precedent of not asking for reparations be set. That token concession is that you allow us corridors of transit across your spatial territory, through which our ships may pass without inspection between our empire and the empires of our brother Morah."

Dormu's mouth closed. The Jhan sat waiting. After a moment, Dormu spoke.

"I can only say," said Dormu, "that I am stunned and overwhelmed at these demands of the Morah Jhan. I was sent to this meeting only to explain to him that our settlements under Sun number 27J93 were entirely peaceful ones, constituting no human threat to his empire. I have no authority to treat with the conditions and terms just mentioned. I will have to contact my superiors back on Earth for instructions—and that will take several hours."

"Indeed?" said the Morah Jhan. "I'm surprised to hear you were

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sent all the way here to meet me with no more instructions than that. That represents such a limited authority that I almost begin to doubt the good will of you and your people in agreeing to this meeting."

"On our good will, of course," said Dormu, "the Morah Jhan can always depend."

"Can I?" The wide-spaced eyes narrowed suddenly in the catlike face. "Things seem to conspire to make me doubt it. Just before you gentlemen joined me I was informed of a most curious fact by my officers. It seems some of your Military Police have kidnapped one of my Morah and are holding him prisoner."

"Oh?" said Dormu. His face registered polite astonishment. "I don't see how anything like that could have happened." He turned to Whin. "Marshal, did you hear about anything like that taking place?"

Whin grinned his mechanical grin at the Morah Jhan.

"I heard somebody had been picked up down at the docks," he said. "But I understood he was human. One of our people who'd been missing for some time—a deserter, maybe. A purely routine matter. It's being checked out, now."

"I would suggest that the marshal look more closely into the matter," said the Jhan. His eyes were still slitted. "I promise him he will find the individual is a Morah; and of course, I expect the prisoner's immediate return."

"The Morah Jhan can rest assured," said Whin, "any Morah held by my troops will be returned to him, immediately."

"I will expect that return then," said the Jhan, "by the time Ambassador Dormu has received his instructions from Earth and we meet to talk again."

He rose, abruptly; and without any further word, turned and left the room. The servers and the musician followed him.

Dormu got as abruptly to his own feet and led the way back out of the room in the direction from which he and Whin had come.

"Where are you going?" demanded Whin. "We go left for the lifts to the Message Center."

"We're going back to look at our kidnapped prisoner," said Dormu. "I don't need the Message Center."

Whin looked sideways at him.

"So . . . you *were* sent out here with authority to talk on those terms of his, after all, then?" Whin asked.

"We expected them," said Dormu briefly.

"What are you going to do about them?"

"Give in," said Dormu. "On all but the business of giving them corridors through our space. That's a first step to breaking us up into territorial segments."

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"Just like that—" said Whin. "You'll give in?"

Dormu looked at him, briefly.

"You'd fight, I suppose?"

"If necessary," said Whin. They got into the lift tube and slipped downward together.

"And you'd lose," said Dormu.

"Against the Morah Jhan?" demanded Whin. "I know within ten ships what his strength is."

"No. Against all the Morah," answered Dormu. "This situation's been carefully set up. Do you think the Jhan would ordinarily be that much concerned about a couple of small settlements of our people, away off beyond his natural frontiers? The Morah—all the Morah—have started to worry about our getting too big for them to handle. They've set up a coalition of all their so-called Empires to contain us before that happens. If we fight the Jhan, we'll find ourselves fighting them all."

The skin of Whin's face grew tight.

"Giving in to a race like the Morah won't help," he said.

"It may gain us time," said Dormu. "We're a single, integrated society. They aren't. In five years, ten years, we can double our fighting strength. Meanwhile their coalition members may even start fighting among themselves. That's why I was sent here to do what I'm doing—give up enough ground so that they'll have no excuse for starting trouble at this time; but not enough ground so that they'll feel safe in trying to push further."

"Why won't they—if they know they can win?"

"Jhan has to count the cost to him personally, if he starts the war, said Dormu, briefly. They got off the lift tube. "Which way's the Medical Section?"

"There"—Whin pointed. They started walking. "What makes you so sure he won't think the cost is worth it?"

"Because," said Dormu, "he has to stop and figure what would happen if, being the one to start the war, he ended up more weakened by it than his brother-emperors were. The others would turn on him like wolves, given the chance; just like he'd turn on any of them. And he knows it."

Whin grunted his little, humorless laugh.

They found the fugitive lying on his back on an examination table in one of the diagnostic rooms of the Medical Section. He was plainly unconscious.

"Well?" Whin demanded bluntly of the medical lieutenant colonel. "Man, or Morah?"

The lieutenant colonel was washing his hands. He hesitated, then rinsed his fingers and took up a towel.

"Out with it!" snapped Whin. "Marshal," the lieutenant colonel hesitated again, "to be truthful . . . we may never know."

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"Never know?" demanded Dormu. General Stigh came into the room, his mouth open as if about to say something to Whin. He checked at the sight of Dormu and the sound of the ambassadors' voice.

"There's human RNA involved," said the lieutenant colonel. "But we know that the Morah have access to human bodies from time to time, soon enough after the moment of death so that the RNA might be preserved. But bone and flesh samples indicate Morah, rather than human origin. He could be human and his RNA be the one thing about him the Morah didn't monkey with. Or he could be Morah, treated with human RNA to back up the surgical changes that make him resemble a human. I don't think we can tell, with the facilities we've got here; and in any case—"

"In any case," said Dormu, slowly, "it may not really matter to the Jhan."

Whin raised his eyebrows questioningly; but just then he caught sight of Stigh.

"Mack?" he said. "What is it?"

Stigh produced a folder.

"I think we've found out who he is," the Military Police general said. "Look here—a civilian agent of the Intelligence Service was sent secretly into the spatial territory of the Morah Jhan eight years ago. Name—Paul Edmonds. Description—superficially the same size and build as this man here." He nodded at the still figure on the examining table. "We can check the retinal patterns and fingerprints."

"It won't do you any good," said the lieutenant colonel. "Both fingers and retinas conform to the Morah pattern."

"May I see that?" asked Dormu. Stigh passed over the folder. The little ambassador took it. "Eight years ago, I was the State Department's Liaison Officer with the Intelligence Service."

He ran his eyes over the information on the sheets in the folder.

"There's something I didn't finish telling you," said the lieutenant colonel, appealing to Whin, now that Dormu's attention was occupied. "I started to say I didn't think we could tell whether he's man or Morah; but in any case—the question's probably academic. He's dying."

"Dying?" said Dormu sharply, looking up from the folder. "What do you mean?"

Without looking, he passed the folder back to Stigh.

"I mean . . . he's dying," said the lieutenant colonel, a little stubbornly. "It's amazing that any organism, human or Morah, was able to survive, in the first place, after being cut up and altered that much. His running around down on the docks was evidently just too much for him. He's bleeding to

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death internally from a hundred different pinpoint lesions."

"Hm-m-m," said Whin. He looked sharply at Dormu. "Do you think the Jhan would be just as satisfied if he got a body back, instead of a live man?"

"Would you?" retorted Dormu.

"Hm-m-m . . . no. I guess I wouldn't," said Whin. He turned to look grimly at the unconscious figure on the table; and spoke almost to himself. "If he *is* Paul Edmonds—"

"Sir," said Stigh, appealingly.

Whin looked at the general. Stigh hesitated.

"If I could speak to the marshal privately for a moment—" he said.

"Never mind," said Whin. The line of his mouth was tight and straight. "I think I know what you've got to tell me. Let the ambassador hear it, too."

"Yes, sir." But Stigh still looked uncomfortable. He glanced at Dormu, glanced away again, fixed his gaze on Whin. "Sir, word about this man has gotten out all over the Outpost. There's a lot of feeling among the officers and men alike—a lot of feeling against handing him back . . ."

He trailed off.

"You mean to say," said Dormu sharply, "that they won't obey if ordered to return this individual?"

"They'll obey," said Whin, softly. Without turning his head, he spoke to the lieutenant colonel. "Wait outside for us, will you, Doctor?"

The lieutenant colonel went out, and the door closed behind him. Whin turned and looked down at the fugitive on the table. In unconsciousness the face was relaxed, neither human nor Morah, but just a face, out of many possible faces. Whin looked up again and saw Dormu's eyes still on him.

"You don't understand, Mr. Ambassador," Whin said, in the same soft voice. "These men are veterans. You heard the doctor talking about the fact that the Morah have had access to human RNA. This outpost has had little, unreported, border clashes with them every so often. The personnel here have seen the bodies of the men we've recovered. They know what it means to fall into Morah hands. To deliberately deliver anyone back into those hands is something pretty hard for them to take. But they're soldiers. They won't refuse an order."

He stopped talking. For a moment there was silence in the room.

"I see," said Dormu. He went across to the door and opened it. The medical lieutenant colonel was outside, and he turned to face Dormu in the opened door. "Doctor, you said this individual was dying."

"Yes," answered the lieutenant colonel.

"How long?"

"A couple of hours—" the lieutenant colonel shrugged helplessly. "A couple of minutes. I've no way of telling, nothing to go on, by

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way of comparable experience."

"All right." Dormu turned back to Whin. "Marshal, I'd like to get back to the Jhan as soon as the minimum amount of time's past that could account for a message to Earth and back."

An hour and a half later, Whin and Dormu once more entered the room where they had lunched with the Jhan. The tables were removed now; and the servers were gone. The musician was still there; and, joining him now, were two grotesqueries of altered Morah, with tiny, spidery bodies and great, grinning heads. These scuttled and climbed on the heavy, thronelike chair in which the Jhan sat, grinning around it and their Emperor, at the two humans.

"You're prompt," said the Jhan to Dormu. "That's promising."

"I believe you'll find it so," said Dormu. "I've been authorized to agree completely to your conditions—with the minor exceptions of the matter of recognizing that the division of peoples is by territory and not by race, and the matter of spatial corridors for you through our territory. The first would require a referendum of the total voting population of our people, which would take several years; and the second is beyond the present authority of my superiors to grant. But both matters will be studied."

"This is not satisfactory."

"I'm sorry," said Dormu. "Everything in your proposal that it's possible for us to agree to at this time has been agreed to. The Morah Jhan must give us credit for doing the best we can on short notice to accommodate him."

"Give you credit?" The Jhan's voice thinned; and the two bigheaded monsters playing about his feet froze like startled animals, staring at him. "Where is my kidnapped Morah?"

"I'm sorry," said Dormu, carefully, "that matter has been investigated. As we suspected, the individual you mention turns out not to be a Morah, but a human. We've located his records. A Paul Edmonds."

"What sort of lie is this?" said the Jhan. "He is a Morah. No human. You may let yourself be deluded by the fact he looks like yourselves, but don't try to think you can delude us with looks. As I told you, it's our privilege to play with the shapes of individuals, casting them into the mold we want, to amuse ourselves; and the mold we played with in this case, was like your own. So be more careful in your answers. I would not want to decide you deliberately kidnapped this Morah, as an affront to provoke me."

"The Morah Jhan," said Dormu, colorlessly, "must know how unlikely such an action on our part would be—as unlikely as the possibility that the Morah might have

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arranged to turn this individual loose, in order to embarrass us in the midst of these talks."

The Jhan's eyes slitted down until their openings showed hardly wider than two heavy pencil lines.

"*You* do not accuse *me*, human!" said the Jhan. "*I* accuse *you*! Affront my dignity; and less than an hour after I lift ship from this planetoid of yours, I can have a fleet here that will reduce it to one large cinder!"

He paused. Dormu said nothing. After a long moment, the slitted eyes relaxed, opening a little.

"But I will be kind," said the Jhan. "Perhaps there is some excuse for your behavior. You have been misled, perhaps—by this business of records, the testimony of those amateur butchers you humans call physicians and surgeons. Let me set your mind at rest. I, the Morah Jhan, assure you that this prisoner of yours is a Morah, one of my own Morah; and no human. Naturally, you will return him now, immediately, in as good shape as when he was taken from us."

"That, in any case, is not possible," said Dormu.

"How?" said the Jhan.

"The man," said Dormu, "is dying."

The Jhan sat without motion or sound for as long as a man might comfortably hold his breath. Then, he spoke.

"The *Morah*," he said. "I will not warn you again."

"My apologies to the Morah Jhan," said Dormu, tonelessly. "I respect his assurances, but I am required to believe our own records and experienced men. The *man*, I say, is dying."

The Jhan rose suddenly to his feet. The two small Morah scuttled away behind him toward the door.

"I will go to the quarters you've provided me, now," said the Jhan, "and make my retinue ready to leave. In one of your hours, I will reboard my ship. You have until that moment to return my Morah to me."

He turned, went around his chair and out of the room. The door shut behind him.

Dormu turned and headed out the door at their side of the room. Whin followed him. As they opened the door, they saw Stigh, waiting there. Whin opened his mouth to speak, but Dormu beat him to it.

"Dead?" Dormu asked.

"He died just a few minutes ago —almost as soon as you'd both gone in to talk to the Jhan," said Stigh.

Whin slowly closed his mouth. Stigh stood without saying anything further. They both waited, watching Dormu, who did not seem to be aware of their gaze. At Stigh's answer, his face had become tight, his eyes abstract.

"Well," said Whin, after a long moment and Dormu still stood abstracted, "it's a body now."

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His eyes were sharp on Dormu. The little man jerked his head up suddenly and turned to face the marshal.

"Yes," said Dormu, a little strangely. "He'll have to be buried, won't he? You won't object to a burial with full military honors?"

"Hell, no!" said Whin. "He earned it. When?"

"Right away." Dormu puffed out a little sigh like a weary man whose long day is yet far from over. "Before the Jhan leaves. And not quietly. Broadcast it through the Outpost."

Whin swore gently under his breath, with a sort of grim happiness.

"See to it!" he said to Stigh. After Stigh had gone, he added softly to Dormu. "Forgive me. You're a good man once the chips are down, Mr. Ambassador."

"You think so?" said Dormu, wryly. He turned abruptly toward the lift tubes. "We'd better get down to the docking area. The Jhan said an hour—but he may not wait that long."

The Jhan did not wait. He cut his hour short, like someone eager to accomplish his leaving before events should dissuade him. He was at the docking area twenty minutes later; and only the fact that it was Morah protocol that his entourage must board before him, caused him to be still on the dock when the first notes of the Attention Call sounded through the Outpost.

The Jhan stopped, with one foot on the gangway to his vessel. He turned about and saw the dockside Military Police all now at attention, facing the nearest command screen three meters wide by two high, which had just come to life on the side of the main docking warehouse. The Jhan's own eyes went to the image on the screen—to the open grave, the armed soldiers, the chaplain and the bugler.

The chaplain was already reading the last paragraph of the burial service. The religious content of the human words could have no meaning to the Jhan; but his eyes went comprehendingly, directly to Dormu, standing with Whin on the other side of the gangway. The Jhan took a step that brought him within a couple of feet of the little man.

"I see," the Jhan said. "He is dead."

"He died while we were last speaking," answered Dormu, without inflection. "We are giving him an honorable funeral."

"I see—" began the Jhan, again. He was interrupted by the sound of fired volleys as the burial service ended and the blank-faced coffin began to be let down into the pulverized rock of the Outpost. A command sounded from the screen. The soldiers who had just fired went to present arms—along with every soldier in sight in the docking area—as the bugler raised his in-

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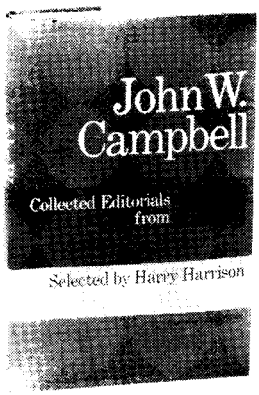

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strument and taps began to sound.

"Yes." The Jhan looked around at the saluting Military Police, then back at Dormu. "You are a fool," he said, softly. "I had no conception that a human like yourself could be so much a fool. You handled my demands well—but what value is a dead body, to anyone? If you had returned it, I would have taken no action—this time, at least, after your concessions on the settlements. But you not only threw away all you'd gained, you flaunted defiance in my face, by burying the body before I could leave this Outpost. I've no choice now—after an affront like that. I must act."

"No," said Dormu.

"No?" The Jhan stared at him.

"You have no affront to react against," said Dormu. "You erred only through a misunderstanding."

"Misunderstanding?" said the Jhan. "*I* misunderstood? I not only did not misunderstand, I made the greatest effort to see that you did not misunderstand. I cannot let you take a Morah from me, just because he looks like a human. And he *was* a Morah. You did not need your records, or your physicians, to tell you that. My word was enough. But you let your emotions, the counsel of these lesser people, sway you—to your disaster, now. Do you think I didn't know how all these soldiers of yours were feeling? But *I* am the Morah Jhan. Did you think I would lie over

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anything so insignificant as one stray pet?"

"No," said Dormu.

"Now—" said the Jhan. "Now, you face the fact. But it is too late. You have affronted me. I told you it is our privilege and pleasure to play with the shapes of beings, making them into what we desire. I told you the shape did not mean he was human. I told you he was Morah. You kept him and buried him anyway, thinking he was human—thinking he was that lost spy of yours." He stared down at Dormu. "I told you he was a Morah."

"I believed you," said Dormu.

The Jhan's eyes stared. They widened, flickered, then narrowed down until they were nothing but slits, once more.

"You believed me? You *knew* he was a Morah?"

"I knew," said Dormu. "I was Liaison Officer with the Intelligence Service at the time Edmonds was sent out—and later when his body was recovered. We have no missing agent here."

His voice did not change tone. His face did not change expression. He looked steadily up into the face of the Jhan.

"I explained to the Morah Jhan, just now," said Dormu, almost pedantically, "that through misapprehension, he had erred. We are a reasonable people, who love peace. To soothe the feelings of the Morah Jhan we will abandon our settlements, and make as many other adjustments to his demands as are reasonably possible. But the Jhan must not confuse one thing with another."

"What thing?" demanded the Jhan. "With what thing?"

"Some things we do not permit," said Dormu. Suddenly, astonishingly, to the watching Whin, the little man seemed to grow. His back straightened, his head lifted, his eyes looked almost on a level up into the slit-eyes of the Jhan. His voice sounded hard, suddenly, and loud. "The Morah belong to the Morah Jhan; and you told us it's your privilege to play with their shapes. Play with them then—in all but a single way. Use any shape but one. You played with that shape, and forfeited your right to what we just buried. Remember it, Morah Jhan! *The shape of Man belongs to Men, alone!*"

He stood, facing directly into the slitted gaze of Jhan, as the bugle sounded the last notes of taps and the screen went blank. About the docks, the Military Police lowered their weapons from the present-arms position.

For a long second, the Jhan stared back. Then he spoke.

"I'll be back!" he said; and, turning, the red kilt whipping about his legs, he strode up the gangplank into his ship.

"But he won't," muttered Dormu, with grim satisfaction, gazing at the gangplank, beginning to be

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sucked up into the ship now, preparatory to departure.

"Won't?" almost stammered Whin, beside him. "What do you mean . . . *won't?*"

Dormu turned to the marshal.

"If he were really coming back with all weapons hot, there was no need to tell me." Dormu smiled a little, but still grimly. "He left with a threat because it was the only way he could save face."

"But you . . ." Whin was close to stammering again; only this time with anger. "You knew that . . . that creation . . . wasn't Edmonds from the start! If the men on this Outpost had known it was a stinking Morah, they'd have been ready to hand him back in a minute. You let us all put our lives on the line here—for something that only *looked* like a man!"

Dormu looked at him.

"Marshal," he said. "I told you it was the confrontation with the Jhan that counted. We've got that. Two hours ago, the Jhan and all the other Morah leaders thought they knew us. Now they—a people who think shape isn't important—suddenly find themselves facing a race who consider their shape sacred. This is a concept they are inherently unable to understand. If that's true of us, what else may not be true? Suddenly, they don't understand us at all. The Morah aren't fools. They'll go back and rethink their plans, now—all their plans."

Whin blinked at him, opened his mouth angrily to speak—closed it again, then opened it once more.

"But you risked . . ." he ran out of words and ended shaking his head, in angry bewilderment. "And you let me bury it—with honors!"

"Marshal," said Dormu, suddenly weary, "it's your job to win wars, after they're started. It's my job to win them before they start. Like you, I do my job in any way I can."■

THE ANALYTICAL LABORATORY/MARCH 1969

PLACE	TITLE	AUTHOR	POINTS
1.	Trap	*Christopher Anvil*	1.80
2.	Wolfing (Conclusion)	*Gordon R. Dickson*	2.00
3.	Minitalent	*Tak Hallus*	2.80
4.	From Fanaticism, or For Reward	*Harry Harrison*	3.91
5.	Mirror, Mirror, on the Wall	*R. E. Allen*	4.29

THE EDITOR

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P. Schuyler Miller

QUANTITATIVE THOUGHT

It is generally difficult and often impossible to find an apt phrase that will sum up the peculiar character of a writer or a type of writing. Nobody has yet evolved a really satisfactory definition of science fiction, and probably nobody ever will. But in one of the stories in a new collection by Hal Clement, "Small Changes" (Doubleday & Co., Garden City, N.Y.; 1969; 230 pp.; $4.95), the author has used a term that—reversed—very neatly describes his own special quality, and delineates a type of science fiction that has become identified with Astounding/Analog.

In "Sun Spot"—originally published here in 1960—a group of scientists are using a comet as a ship that will enable them to make close observations of the Sun. "Careless, non-quantitative thought could picture the comet's vanishing—like a snowball in a blast furnace," the author comments, going on to point out that this is precisely what does *not* happen to most comets that swing through the fringes of the solar atmosphere. Reverse that, and you have a terse description of the quality that is so striking in such classics as "Mission of Gravity" and in most of the stories in this book.

Hal Clement is probably our foremost exemplar of *quantitative thought* in science fiction. And this is the key to the best of the "hard" science fiction with which he—and Analog—have been identified.

Now to be specific, "quantitative thought" means that it isn't enough to imagine a bizarre situation, think over some of the qualitative possibilities, and concoct a plot in which they play a part. As in chemistry, a quantitative analysis of your

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situation may turn the story inside out.

At the 1960 World Science Fiction Convention in Pittsburgh, Hal Clement not only described how he had quantitatively developed the high-gravity world of "Mission of Gravity," but distributed a booklet describing the process and exhibited the model he had made of the planet. In "Sun Spot," the process again leads to striking and unsuspected—to the qualitative thinker—results. Of course, the ability to calculate isn't enough: the data and relationships have to be made the framework of a story. And that Hal Clement also does excellently.

As might be expected, he is at his best as a quantitative thinker and writer in the six stories that were originally published here. Quantitative stories are one of the types that are branded as "Analog" stories, and have been since the days of George O. Smith and "Venus Equilateral," if not before. In "Dust Rag," some quantitative effects of a lunar dust storm create a problem and make its solution possible. "Trojan Fall" portrays the sad fate of a non-quantitative thinker trying to hide from the cops in a double-star system, and "Fireproof" gives us another hapless schemer who just doesn't know enough about the way combustion occurs in free fall.

These and "Sun Spot" all utilize basically simple physical relationships. "The Mechanic"—here in 1966—and "Uncommon Sense" (1945) are stories in which the author has created his own parameters to a greater extent. In the former, and more richly developed, the "mechanic" is a technician who works with regeneration of damaged organs and tissues and who has some tough technical problems to solve in a milieu which includes synthetic life forms. "Uncommon Sense" is a short problem story whose protagonist has to think quantitatively about the strange creatures of a barren world.

Of the three non-Analog stories, "Raindrop" from a 1965 *If* is right in the mold. A water world, in orbit around Earth, is being used as a laboratory in which food farms may be devloped to meet the needs of an exploding population. Details are nicely quantified, but the gimmick that provides a solution is rather flat, even if valid.

Two from *Galaxy* round out the book and are the least quantitative of the nine. Both are variations on the vapor-life theme, with fairly conventional "twist" endings. In "Halo" the solar system is a farm for gigantic galactic creatures whose slaves we think of as comets. Earth isn't harvested down to the bare rock because a student goofed. "The Foundling Stars" is better, but the unthinkable ET's are rung in to rationalize an inexplicable occurrence.

When is Hal Clement going to

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find time to quantify another book-length story?

RETIEF AND THE WARLORDS

By Keith Laumer • Doubleday & Co., Garden City, N.Y. • 1968 • 188 pp. • $4.50

You either like Retief, or you can't stand him. I've never found an "Eh!" reader who can take him or leave him.

Jame Retief is a career officer in the Terran diplomatic corps who seems to have devoted his life and energies to an incessant process of getting ignorant, stupid and venal top-ranking diplomats out of the trouble they go looking for. His approach to the involved interplanetary and interspecific relationships of the 27th Century galaxy is somewhat more light-hearted and tongue-in-cheek than that of Poul Anderson's Dominick Flandry, and his misadventures are correspondingly more outrageous. The villains of these pieces are stigmatized—in good eighteenth and early nineteenth century style—by such names as Foulbrood and Bloodblister. Any possible parallels you may find with situations and officials mentioned in the daily press or on TV are strictly your own responsibility. "Honi soit."

This time, Retief's eternal burden, Minister Magnan, has sent him out to dissuade some rather individualistic Terran colonists from resisting the efforts of a race of aggressive lobsters, the Haterakans, from wiping them out. That our hero is able to make an ally of one of the higher-ranking "Hatracks" is not entirely due to chance; Retiefs' luck rarely is. But things begin to happen, continue to happen, and go right on happening with the speed and violence that invariably accompanies Retief's stirring of messy political pots. Can't someone with a time machine bring him back to *our* time?

THE STILL SMALL VOICE OF TRUMPETS

By Lloyd Biggle, Jr. • Doubleday & Co., Garden City, N.Y. • 1968 • 189 pp. • $4.50

This book is the rich and detailed development of a short story that was here in Analog back in 1961. It is one of the few books of its kind that weaves music into its plot as anything but a superficial stage effect—which is natural enough, since that is the author's specialty. And if the gimmick of revolution-by-music isn't totally convincing, that may be because I have a tarnished tin ear.

Jef Forzon of the Cultural Survey—a bunch of academic tea-tasting do-gooders if ever there was one—is sent to the rugged world of Kurr to lend a hand to the Interplanetary Relations Bureau. He, and they, are supposed to get a revolution started without overt interference, and the IRB has been getting nowhere at all. They are

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hostile, but Forzon has his orders. And, since the situation on Kurr is far more complex than he or his superiors realize, Forzon is soon up to his ears in trouble, and in danger of having them lopped off.

What makes the book more than just another good, well developed, nicely involved future adventure yarn is the fact that Forzon is a member of the Cultural Survey, and that he instantly recognizes the extraordinary part that art and music play in the barbaric society of Kurr. How he uses "the still small voice of trumpets," literally, to achieve his mission is well worth finding out for yourself.

SOS THE ROPE

By Piers Anthony • Pyramid Books, New York • No. X-1890 • 157 pp. • 60¢

This original novel won a $5,000 contest which involved possible filming. I hope the film producer—a minor one—doesn't take up his option: he could, and probably would, convert it into another travesty like "One Million B.C."

The book is simpler and less ambitious than the author's striking "Chthon"—a reasonably straight story of the far future, with no intricate interplotting or weaving back and forth through time and relatively little reliance on symbolism. In a post-holocaust future, a surviving fragment of technological society is managing to sustain—and may have created—a strange and violent mass society based on survival of the fittest. Following intricate rules, men fight and mate and cope with a world that is unstintingly hostile, yet generous.

One of these goliaths, Sol the Sword, is a bit too successful. He begins to weld together a new and different tribe with a good deal of autonomy and self-sufficiency—one that has an excellent chance of developing into a globe-covering empire in which population will again grow without bounds, technological secrets will be rediscovered, and history will repeat itself. The magicians behind the scenes want none of this, and the instrument they choose to bring Sol down is the disarmed, too-intelligent Sos.

This skeleton outline does nothing to suggest the intricacy of the interrelationships of the men and women in the book. I think it's the author's best.

DAYMARES

By Fredric Brown • Lancer Books, New York • No. 73-727 • 317 pp. • 60¢

This is another product of the recent tendency to make new books out of pieces of old ones, like a patchwork quilt. If there is a new generation of readers who haven't read Fredric Brown's old stories, here are seven of them: one, and maybe two, of them arrant fantasy —"The Angelic Angleworm," from our late lamented cousin *Unknown*

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Worlds, in which Heaven starts making typographical errors in the Book of Fate, and "Pi in the Sky," which involves a totally unbelievable miracle-working machine. For that matter, the gadget of "Gateway to Darkness," which shrinks entire planetoids when its rays have shone on only one bit—yet doesn't affect people and ships also in contact—is pure hokum.

The one "classic" in the book is "The Star Mouse," a corny retort to Mickey Mouse which has nonetheless aroused the affections of many readers since 1941. In "Daymares" another ray stirs up the populace to mass murder. In "Come and Go Mad"—which appeared first in *Weird Tales*—there is nonetheless a somewhat rational explanation of the Menace that Rules Earth. And "Honeymoon in Hell" is, for gosh sake, a perfectly straightforward people-on-the-Moon story.

There's not much of the Brown flavor here . . . more of a dark brown taste.

SYNTHAJOY

By D. G. Compton • Ace Books, New York • Ace Science Fiction Special H-86 • 189 pp.• 60¢

I must apologize to you and to Ace Books for not having commented long before this on their new series of "Science Fiction Specials," and for not identifying the "Specials" as such. The tag is no misnomer; these are all original books in the sense of being out of the ordinary, and most of them are also published for the first time. This one, however, has previously appeared in England.

"Synthajoy" is a prime example of the successful and sensible use of mainstream writing techniques, which are supposed to be the distinguishing feature of the "New Wave" from England and California, and which are all too often combined with nonsense. The story is gradually and indirectly told by the widow of the Nobel laureate who invented Sensitape, an electronic means by which anyone can experience the emotions of the person or persons who recorded the original experience. An audience can feel what an artist feels as he paints, what a composer feels as he plays his greatest works . . . and what a pair of sexual athletes feel as they enjoy each other.

Thea Cadence has been tried and is under Sensitape treatment for having murdered her world-hero husband, under circumstances that she no longer wants to remember and that only gradually unfold in bits and pieces as she does confusedly drift back into various parts of her past. The personality of Edward Cadence, brilliant and ruthless, also evolves as we see him through her eyes and through his actions, heading for his final triumph in Synthajoy.

This will certainly be a candidate for awards.

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A FAR SUNSET

By Edmund Cooper • Berkley Books, New York • No. X-1607 [illegible] pp. • 60¢

I am sorry that I didn't get my hands on the original 1967 edition of this excellent story, published by Walker & Company, until after the paperback was out. I believe it was originally published in England, and I hope future Walker titles are as good and easier to get.

You might call it an anti-formula book. Paul Marlowe, trapped on a planet of Altair Five, doesn't spend his life and one hundred six pages in a successful effort to escape. He recognizes that since he has not been killed, Baya Nor is now his world and its people are his people. He must find a place for himself and do what he can to carry them a little further along the road of civilization. And he does, under very strange circumstances and in spite of great [illegible]. It's low-key and believable all the way.

STAR WELL

By Alexei Panshin • Ace Books, New York • No. G-756 • 157 pp. • 75¢

THE THURB REVOLUTION

By Alexei Panshin • Ace Books, New York • No. G-762 • 159 pp. • 75¢

If you are serious about your science fiction, and find $4.50 too much to spend for the frivolous goings on of Retief, or Dominick Flandry, or one of Ron Goulart's Chameleon Corps agents, I strongly recommend that you introduce yourself to Anthony Villiers at fifty cents a throw—and worth much, much more.

This young man is—I am sure, by no coincidence—strongly reminiscent of the early Saint. (Villiers is, incidentally, more formally known to the human peoples of the Galaxy as Viscount Charteris.) He has position, relatives and some money behind him, but he prefers to—and sometimes has to—live by his wits. He is insatiably curious and loves to meddle with other people's troubles. He has as a buddy and book companion the fuzziest, most philosophical, highest-browed yellow frog in the Galaxy, a frog named Torve.

We meet Villiers and Torve on the deadly dull little by-world, Star Well, where the two and their associates manage to louse up the business and pleasure of a set of nogoodniks, to shine a bright spotlight into the drab life of a teen-age female, and to turn stones like mad. We follow them, accompanied by a troop of well-meaning and basically wholesome—if over-affluent—yagoots, to the resort-world of Pewamo with its peculiar pink clouds and other odd ecological twists. There Villiers and his associates are encamped as sincere and dutiful Big Beavers, breaking in the neophytes, when hell simmers

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a little. (Torve has a red tricycle in this one, to give you an idea.)

It's all glorious, ridiculous, tongue-in-cheek parody of almost anything you can think of. "Mask World" may be out by the time you see this. Get it.

CLASSICS IN REPRINT

THE REST OF THE ROBOTS

By Isaac Asimov • Pyramid Books, New York • No. R-1783 • 159 pp. • 50¢

New printing of the paperback edition of the 1964 omnibus which finished off the collection of Asimov's positronic robot stories. "Caves of Steel" and "Naked Sun," the full-length robot detective stories, are published separately.

THE JEWELS OF APTOR

By Samuel R. Delany • Ace Books, New York • No. G-706 • 159 pp. • 50¢

Too recent to be a "classic"? Don't you believe it. This was the first book by one of our brightest new talents—and this time Ace is publishing it uncut. If you read it before, read it again.

SOLAR LOTTERY

By Philip K. Dick • Ace Books, N.Y. • No. G-718 • 188 pp. • 50¢

Reissue of one of another top "new" author's early—and excellent—books, in which he gave the wheels-within-wheels plot new life.

VENUS PLUS X

By Theodore Sturgeon • Pyramid Books, N.Y. • No. X-1773 • 160 pp. • 60¢

Reissue of the 1960 original paperback. When Sturgeon writes about sex, it's not like any sex book you ever saw before.

THE LINCOLN HUNTERS

By Wilson Tucker. Ace Books, N.Y. • No. H-62 • 192 pp. • 60¢

A long overdue paperback edition of one of the best time travel stories we have had: 2578 A.D. versus 1856.

SLAN

By A. E. Van Vogt • Berkley Books, N.Y. • No. X-1543 • 191 pp. • 60¢

New paperback edition of one of the greatest superman stories ever published in *Astounding* or anywhere else.

SEETEE SHIP

By Jack Williamson • Lancer Books, N.Y. • No. 73-732 • 222 pp. • 60¢

SEETEE SHOCK

By Jack Williamson • Lancer Books, N.Y. • No. 73-733 • 223 pp. • 60¢

These stories about the discovery and conquest of what is now routinely discussed as antimatter, but which Jack Williamson dubbed contraterrene ("CT" or "seetee") should be read in the above order, though they were published in *Astounding* t'other way around.

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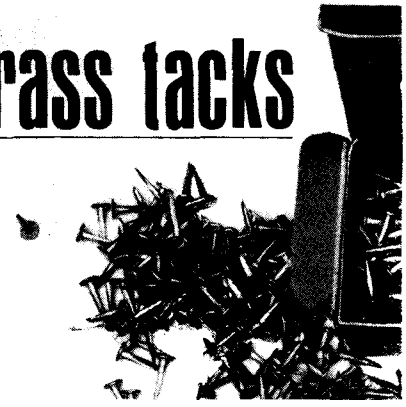
brass tacks



Dear Mr. Campbell:

I confess to being a little disturbed by what seems to be a somewhat Europacentric bias in your December editorial. William McNeill's "The Rise of the West" (U. of Chicago Press, 1963; NAL paperback, Mentor ML661, 1965) is recommended for improving the perspective.

Specifically, as a couple of hundred others of your devoted readers have probably told you by now, the horse collar was not "invented somewhere, sometime during the Middle Ages in Europe." In Joseph Needham's "Science & Civilization in China"—a work that I think you would find fascinating—volume IV, part 2, page 323, we find "Collar-harness in its initial form appears explicitly and indubitably in the procession of Chang I-Chhao in + 851, nearly a century before the first possibly acceptable documents of Europe. But depictions which can only have been based upon this harness go back to the last quarter of the + 5th century and the first quarter of the + 6th, so that it would be very reasonable to date the first appearance of it about + 475, in the empire of the Northern Wei. And the place would again be significant, for the sands of the borders of the Gobi desert in Kansu and Shensi needed strong tractive apparatus." Continuing a fairly detailed—and illustrated—discussion, Needham adds on p. 326, "Whenever the padded and stiffened horse collar was introduced, it was, we are now agreed, a surrogate for the bovine cervical and thoracic vertebrae. (There's an aspect you *did* catch). But was it an absolutely new thing? To Haudricourt we owe a very interesting hypothesis about its origin, based primarily on philological evidence. Starting with the word 'hames', which in English means the metal skeleton of the modern combined collar, he traced it eastwards through more than twenty eastern European and north Asian languages, revealing thus the fact that in many of the latter it means something apparently quite different, namely the pack-saddle of the Bactrian camel. It would follow, therefore, that the essence of the invention of the collar-harness was the application of the horseshoe-shaped felt-padded wooden ring upon which camel baggage was piled, to the chest and shoulders of

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the horse, no doubt with dimensions somewhat modified by reduction. No wonder, then, that the invention was not made in Europe . . ."

Someday, you might be interested in writing an editorial on the Chinese invention of the mechanical clock which Lewis Mumford credits with being the starting point of European technology and industrialization.

A. ELGIN HEINZ
53 Everson Street
San Francisco, California 94131

Hm-m-m . . . maybe Marco Polo sneaked that one back to Europe, too?

While most Americans are personally aware of the excellent cuisine the Chinese developed, relatively few realize that the widely admired Italian and French dishes stem very largely from Marco Polo's introduction of such Chinese ideas as noodles, ravioli, and tasty-but-not-heavily-spiced sauces. Modern monosodium glutamate food-flavor enhancer also stems from ancient Chinese food preparation techniques.

I can quite believe the Orientals were first with the horse collar; my point was that it was a magnificent technological achievement—by no means the symbol of nontechnology it's now considered.

Dear Mr. Campbell:

Your November editorial has been troubling me for some time. In particular the test for which way time is flowing. Assuming that entropy is a valid and true test then it would seem that rate of time can be determined by the rate of energy dispersion or in other words the rate at which entropy is increasing over a particular area. My questions follow:

1. Which way in time is a piece of Uranium 235 moving and at what rate?
2. Which way was the Uranium 235 moving in time at the moment of its creation?
3. When was the Uranium 235 created?
4. Which way is the sun moving in time?
5. Which way in time is the earth moving in relation to the sun?
6. If the sun and earth are moving in the same direction in time, are they proceeding at the same rate?
7. If the sun and earth are proceeding through time at different rates what factor or factors keep the solar system a temporal whole?
8. Which way is life moving in time?
9. At what rate is time moving at the center of an atomic explosion?
10. In reference to Question 9 would it be possible somehow to measure the rate of time in an atomic explosion? Since no clock exists that would withstand an explosion of that power I would sug-

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gest projecting a high-powered coded laser through such an explosion. If the entropy test is valid, it would follow that as the energy release, or in other words as entropy increased, within that particular area time rate should also increase proportionately proving time and not light to be the variable. Again, this is assuming that entropy is in fact a valid test.

I really do not expect answers to my questions but I would appreciate an acknowledgment of some sort and if anyone knows of a physicist or two that speaks laymanese you should.

DAVID C. LASKY
HHD MICOM
Redstone Arsenal, Alabama

Entropy may indicate the directions of "Time's Arrow"—but does it measure its length?

Dear Mr. Campbell:

As an attorney I found "The Form Master" in the December Analog amusing but misleading. A reader tempted to lead the easy life of the "hero" should be aware that business, the legislative branch of government and the bureaucracy have devoted great efforts to solving the problems created by a "form master."

In real life anyone engaged in the activities depicted in the story would be subject to numerous criminal charges, perhaps as many as fifty separate charges under federal and Oregon law. An interesting contest would be one to determine which contestant could list the most state and federal charges to which the "hero" would be subject.

The con man we have always had with us and each time he finds a loophole his adversary attempts to close the loophole. Large computer users, for example, divide the programming process to make it difficult for the programmer to write checks to himself.

An interesting story would describe the difficulties encountered by anyone today attempting to live a false identity in this era of credit bureaus, computers, document verification and pre-employment investigations.

And readers should take with a grain of salt the statements in the story concerning the difficulty of obtaining proof and presenting the proof intelligently. It requires a great deal of effort to gather and collate a room full of evidence, true, but I have done so as have thousands of other attorneys.

HENRY KANE
1855 N.W. Arcadia Court
Beaverton, Oregon 97005

Of course they have anti-con-man arrangements—many of which have been worked out only after some ingenious, thoughtful, but amoral gentleman had neatly perverted computer stupidity to his ends. Like the change that was hastily made in bank bookkeeping programs after one smart crook used the magnetic-ink system to get

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most of a day's deposits at the bank listed to him!

Dear Mr. Campbell:

I want to register a gripe that I've been nursing for several years now. Science-fiction writers and editors are fairly careful about keeping up with informed opinion in those sciences which are relevant to hypothetical technologies—physics, chemistry, astronomy, molecular biology, and so on. Stories based on the premise that Venus is covered with swamps, or that Mars has a breathable atmosphere, or that the atom is a miniature solar system, are not getting published these days—at least not in Analog. If things currently thought impossible happen in a story, the author is careful to bring in extraordinary explanations involving higher dimensions or psi forces or what have you.

In the biological sciences, however, writers and editors are not so careful. I'm moved to write this letter because of irritation with two stories published in Analog in the last year which embodied gross biological whoppers.

The first was a story by James Blish—I've misplaced the issue in which it was printed—in which a young woman, who served as the good-guy foil to a worthless hippie figure, nerved herself to remove a control device which had been surgically implanted in her, "under the mastoid process." The operation was performed by the young woman without anesthesia, using a steak knife filched from a meal tray.

Now, if Blish had bothered to open an atlas of human anatomy, he would have seen that removing an object lying deep to the mastoid process is not like taking a splinter out of one's finger. If you shove a thumb into the crevice behind one of your ears, the bony prominence you feel to the rearward will be the mastoid process. In order to get at an object lying deep to this process, Blish's heroine will have to cut the fascias binding together the following: the major motor nerve to the superficial muscles of the side and back of the head, the artery that supplies the ear and then branches to supply the back of the scalp, a big vein which is one of the two that combine to form the external jugular, the sensory nerve to the ear tube and eardrum, and the large muscle (sternomastoid) which attaches to the mastoid process and maintains the balance of the head on the neck. All these structures crisscross in an area of about two square inches overlying the mastoid process. Half an inch deeper, her steak knife will be resting on the internal jugular vein and the internal carotid artery, and if she cuts either, she will bleed to death fairly quickly.

So at best, this is not a simple operation like taking out an appendix. Blish's heroine, moreover, is operating under less than ideal

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conditions: she can't see what she's doing, she's holding her arm in an awkward position, and she's in pain. If you want to understand how much pain she's in, ask someone to give you a good swift kick in back of the ear.

I submit that all this is simply not possible. It would take a skilled surgeon, using a trained eye under operating-theater lights, to separate these structures and pin them aside harmlessly. Doing it by touch alone is a bogglesome undertaking. Doing it by touch alone, on one's own head, in screaming pain, using a steak knife, is out of the question--particularly for Blish's heroine, who had no training in surgery.

The other dubious story was Phillifent's "The Rites of Man," in the November '68 Analog. In this story, 100% human-shaped, *Homo sapiens* aliens descend and ask to be enrolled in the Olympic games. A carefully-planned draw in said games provides the basis for a peaceful exchange of goods, ideas, and *genes*. It is the last item that makes my hackles crawl.

If there's one point in evolutionary biology that can be regarded as established, it is that man originated on this planet by evolution from earlier vertebrates. This is clear not just from the admittedly spotty fossil record, but from the evidence of comparative anatomy. Every bone, muscle, nerve and organ in the human body is homologous with the corresponding part in the body of every ape—or, to an only slightly lesser extent, every monkey, or dog, or lizard, or salamander. This adds up to a staggering amount of correspondence, extending down to the cellular and molecular levels.

It is quite possible that intelligent animals have evolved elsewhere in the universe. But it is fantastically unliklely that, when we have an intelligent alien to dissect, we will find that he has exactly twelve cranial nerves, seven gill slits in the embryo, eight ossification centers in the wrist, thirty-two teeth of such and such a cusp pattern, and so on and so on. There are literally thousands of such features tying man's ancestry to the other vertebrates, both living and fossil. (There are similar features on lower levels of analysis—the structure of the genetic material, the handedness of amino acids, peptide sequences in functionally equivalent proteins, and so on.) Analogous features might have evolved in any number of other ways, as they have in the other phyla of animals on this planet. The vertebrate ground-plan represents the way things happened to occur, not the way they had to occur. Animals with a separate evolutionary history have a zero likelihood of developing the thousands of minute correspondences needed for interbreeding.

It is immeasurably more likely

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that men will start exchanging genes with moose and mice, who are, after all, blood relatives, than that men will interbreed with aliens having a separate evolutionary history. And there is an overwhelming amount of detailed evidence that makes it virtually certain that any aliens we find *will* have a separate evolutionary history. Men evolved out of fish right here on this planet; we are not castaways from a Pleistocene UFO, nor—as far as we can judge from the work of two centuries of archaeologists—was there ever a previous industrial civilization capable of colonizing other worlds.

Now, there is nothing illegitimate about a writer explaining all this away if he wants to have his hero marry a Martian. I ask only that it be explained away in a fashion plausible enough to allow me to read the story without grinding my apelike molars. Simply leaving such a miscegenation as a casually introduced story element is like beginning a story, "Colby Rawson locked his spacecraft into an orbit around Rigel, which he observed was cube-shaped, and opened his sealed orders." If Rigel is cube-shaped, I want that explained, because it doesn't jibe with what we know about physical mechanisms. If Colby Rawson is going to swap chromosomes with a Rigelian autochthone, I want that explained, because it doesn't jibe with what we know about biological mechanisms. Simply ignoring it is contrary to the rules of science fiction, which require that scientific knowledge be given a fair hearing in public before it is hanged.

MATT CARTMILL
5523 So. Dorchester
Chicago, Illinois 60637

Valid points!

Dear Mr. Campbell:

A skeptic like yourself should be more careful in the quotations he disseminates. On the back page of the November issue you attribute to Lincoln a widely-circulated counterfeit piece of wisdom.

To summarize, a California publication called *Weekly Law Digest* used the same quote and then, after investigating at my request, printed the following retraction: "President Lincoln neither wrote nor spoke the words although they have been attributed to him in hundreds of publications since they first appeared under his name in a 1942 pamphlet. Their true author was probably Rev. William J. Boetcker, who wrote down some of the thoughts in 1916 and subsequently amplified them."

The pamphlet referred to was published in the fall of 1942 by a right-wing outfit called the Committee for Constitutional Government.

Of course, if I am wrong it should be easy to produce some source attributing these words to Lincoln before 1942. That's not

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much. I could ask for a source in or before 1865.

Stick to the future, where you can say what you wish, without fear of contradiction.

J. B. LAWRENCE
25701 Alto Drive
San Bernardino, California 92404

I don't know who did say it—I saw it in a respected publication and accepted the attribution. However, I published it because it seemed a wise comment, whoever said it.

Dear John:

The drip-engine proposed by Mr. Lore in the February '69 Analog is not exactly new; I've met several variations of it from students in twenty-two years of high school science teaching. The stock reasons why it won't work do, of course, lie in the laws of thermodynamics.

The water going up the wick *is* running downhill as far as the applied forces are concerned, just as a nail "falls" to a magnet placed above it. I admit I should hate to have to compute the detailed structure of the potential field of the wick, though it shouldn't be hard to express in a general way. The point is that the work done against gravity is provided by molecules yielding to the "capillary" forces, and those forces will not suddenly get weaker at the other end of the wick, if the latter is higher than the surface of the water reservoir, it *won't drip*. (If it's lower, as in the arrangement we sometimes use to keep the plants watered when we're away from the house for a week or two, one merely has a rather fancy siphon, of course.)

All this is, I admit, a statement of faith. I have never performed this particular experiment. I have, however, done enough other experiments in my time to convince me that Josiah Willard Gibbs had a pretty good idea what he was talking about. If any of my students ever want to build the Lore engine, I won't dream of discouraging them. I'll gladly grade them on the ingenuity and general competence shown in devising and building devices for measuring temperature, hydrostatic and vapor pressures, and the flow of liquid and heat in the various parts of the machine. If any of them come up with a heat-measuring device which does not depend on subtraction, and hence on taking the first two thermo laws for granted, I'll gladly put A's into their averages.

HARRY C. STUBBS

In any of these "perpetual motion" gadgets, the real challenge is working out a coherent explanation of what does—or doesn't—happen. We may all agree beforehand that it doesn't work; the trick is to develop a cogent logical defense of your opinion!

Incidentally—consider the maple tree. Cut one hundred feet above the ground, and it bleeds sap. The sap drips. Please explain!

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made a six-foot high balloon of it, and tried putting atmospheric pressure inside, the thing would burst. Pressure per square inch adds up linearly around a restraining membrane. A band one inch wide around a man's chest might measure 36″ around; total area of this band is 36 square inches. At 10 pounds per square inch pressure, the band is trying to restrain a bursting pressure of 36 x 10 = 360 pounds. A one-inch wide band of one-mil polyethylene could not be trusted to withstand that.

However, if you used a heavy canvas sack, with a one-mil polyethylene liner, you'd have a gas-tight bag that could stand considerable internal pressure. The canvas supplies the strength, while the polyethylene supplies the gas-tightness.

The human skin supplies the gas-tight membrane, while the elastic leotard can supply the bursting-pressure resisting strength.

The result is a spacesuit system that allows the astronaut freedom of movement practically equivalent to normal Earth-environment.

There are a few limitations; fine manipulation like threading needles may well be out—it's difficult to do with gloves on. The space-leotard must cover the fingers, too.

Some padding must be used in certain areas where a stressed elastic membrane would not touch, to fill out the astronauts' contours to an always-convex shape.

But the major problem is getting into the thing! If you've ever seen the problem a woman has getting into a new, tight, long-line girdle —you'll have a beginning of a notion of the problems of the Well-Dressed Astronaut getting dressed. That elastic suit has to exert hundred-pound pressures; it is not stiff, but it's *really* clinging. The astronaut won't get overheated and worn out wearing it in space—but hé may be worn out and overheated before he goes into space. It's an Elegant Solution; now all that's needed is an Elegant Solution to the problem of getting into it.

Perhaps a shrink-fit plastic, like the stuff they put around and over the necks of bottles sometimes? A plastic that's put on swollen and limp because of a softening agent; as the agent evaporates, the plastic shrinks and hardens to a perfect skintight fit.

* * *

The second Elegant Solution I've encountered recently is an answer to the problem that's been gnawed on now by three generations of scientists: How to make a perfect transducer for converting sound waves to electrical signals. Otherwise known as "a perfect microphone."

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To the ordinary citizen the problem seems one that's long since solved. Didn't Alexander Bell develop that when he said "Come here Mr. Watson!"?

No. Alexander Bell did *not* develop an adequate microphone; it was, to use slang, a stinking, lousy unit. It sent something recognizable as speech only by courtesy of the remarkable ability of the human mind to unmask camouflaged information.

During the early days of the telephone, Edison and Berliner contributed mightily to the production of a satisfactory-for-speech-transmission microphone, so that by the first quarter of this century, the carbon microphone had become standard.

The introduction of broadcast radio was the next step. Carbon microphones are quite satisfactory for speech; a frequency range of 200 to 2,500 cycles is quite satisfactory to understand and recognize voices. The carbon "mike" is sensitive, has a high signal output that can be sent directly to an earphone without amplification, and did in fact constitute an elegant solution to the simple telephone problem. But what it did to music was a sin and a shame. The triangle was missing almost one hundred percent, the piccolo and flute were reduced to vaguely heard tin whistles, and the bass viols and tympani were left out of it altogether.

Our older readers may remember those early days of broadcast radio; the first microphones left a *great* deal to be desired.

When the need for high-fidelity microphones arose, work on the problem got underway quickly. Early, immediate improvements were easy; electronic amplifiers were available, which allowed the use of previously-developed very-low-output microphones which weren't suitable for simple telephone microphones.

First efforts included what amounted to earphones-used-in-reverse. If a magnetic-material diaphragm is waved in front of a permanent magnet around which a coil of wires is wrapped, a current will be generated in the coil of wire due to fluctuations in the strength of the magnetic field.

Then there was the ribbon microphone, in which a metallic ribbon was vibrated by sound waves between the poles of a magnet.

Then piezoelectric crystals got into the act; certain crystals, when compressed, or twisted, give a small voltage on opposite sides of their faces.

All of these had troubles, due to nonlinearities, diaphragm resonances, internal structural resonances and assorted mechanical peculiarities.

The best of all was the condenser microphone; a very thin, limp conductive diaphragm mounted close to and in front of a massive base plate; the diaphragm was charged

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with respect to the base plate. The air between diaphragm and base was dielectric, so the system was a condenser—with a movable front plate. Wiggling the front plate produced changes in the voltage on the condenser proportionate to the movement.

Crystal microphones had difficulties with diaphragm, connecting linkage from diaphragm to crystal, and necessary sealing of the crystals. (The crystals were water-soluble, and humidity ruined them—not good for a device intended to be in the airstream from a human being's lungs! Later development of the titanate piezoelectric ceramics eliminated that problem.)

Magnetic microphones had problems of resonances not only in their diaphragms, their internal chambers, and other mechanical structures, but also with any coils used. Coils have capacitance; the combination of inductance and capacitance meant electrical as well as mechanical resonances to contend with.

Condenser microphones became *the* standard of quality. The diaphragm itself was the only moving part; the thing had no inductance to worry about, and generated practically no noise whatever. But it did need a lot of amplification—so much that a pre-amplifier had to be built into the microphone itself.

However, really wide-frequency-band mikes were developed and by the mid-thirties, some excellent microphones were available. High-fidelity radio and recordings became possible; all that was required was the commercial development of high-fidelity household playbacks. After all, when microphones couldn't pick up sounds beyond the range of 100 to 7,000 cycles—who needs hi-fi?

Currently, many microphones are available on the market that are guaranteed to produce nearly equal response between 20,000 and 30,000 cycles per second, plus or minus only a few decibels.

Until the days of stereo, that was fine—but stereo presents certain tricky problems, as acoustic engineers know. (But don't say too much about!) Stereo-location effects depend on the phase relationship of the arriving sound waves at the two microphones and at the two ears. To hear the musical sounds, high *frequency* fidelity is needed; to hear the *location*, high *phase-relationship* fidelity is essential.

I've heard stereo recorded with very, very special microphones which were *both* phase *and* frequency hi-fi. Believe me, modern stereo is, so far as phase-fidelity goes, about in a class with the first broadcast programs.

Yes, modern microphones *do* give excellent frequency fidelity—but the diaphragms used in the mikes are little drum heads; at high frequencies, they go into waves such that one part of the diaphragm

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is moving inward while another is moving outward—they produce phase-inversions. This can make a high-frequency sound, or a part of a complex tone, suddenly transpose and you hear part of a piccolo note coming out of where the bass viol is located. And the higher range of the piano has jumped over into the first violinist's lap.

You won't be consciously troubled by that—the brain is too highly sophisticated to pass such nonsense-data as that. But when you hear stereo recorded on phase-and-frequency-flat microphones, you *know* there's a difference, even if you can't say what it is.

There is one slight trouble recording stereo with the phase-flat mikes currently available. The frequency-flat microphones that go up to 30,000 cycles can be purchased for $50 or so; ultra-high-fidelity jobs going to 100,000 cycles can be bought for $200 or so. But the cheapest phase-flat-frequency-flat microphones will cost you around $2,000. They're Laboratory Standard microphones normally used for checking what ordinary microphones are doing in the way of lousing up the actual sound waves. There are only about four companies on Earth that make them, and they're not widely popular—even with recording companies!

The microphone problem is, you see, a lot more difficult and complex than it seems at first glance.

But someone has, at last, come up with one of those Elegant Solutions that produces an ideal phase-flat, frequency-flat microphone that's good not merely to 200,000 cycles, but to at least 15,000,000 cycles! (That was the limit of accuracy of the particular scope my informant saw the prototype tested on; the microphone was still doing fine responding to a quartz-crystal sound-source, driven by an RF signal generator.

It's an Elegant Solution because it's so beautifully simple—and production cost would be about $1 a unit!

I don't know who invented the thing—and unfortunately the inventor doesn't have "an invention" in the legal sense. It's a case of having the clarity of thought necessary to recognize that well-known gadget A is, in fact, exactly what well-known Problem Q needs.

The new invention consists of an exceedingly simple structure, having *no* critical dimensions, and no critical shapes. In essence, it can be stamped out of sheet metal, or die-cast forms can be used, and put together with glue. It will still be an ultra-high-phase-and-frequency-fidelity microphone.

The structure:

This is the essence; a million variations are possible. It consists of a shell, coated on the inside with a semiconductor layer. Connections are made to the shell and the inner surface of the semiconductor. A

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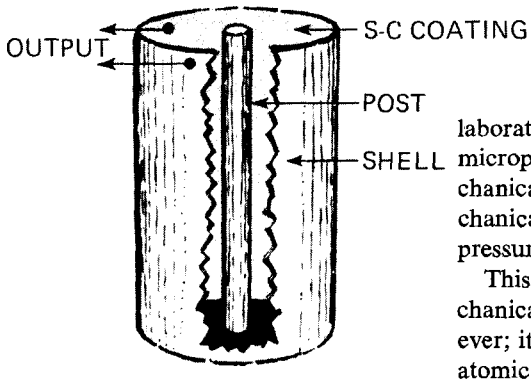

post in the center of the shell is coated with a low-energy beta-emitting radioactive isotope—one of such low energy that an inch or so of air stops the radiation completely. The semiconductor coating serves simply as a beta-ray detector.

In essence, the microphone is simply a radioactive radiation type thickness gauge—a gadget that's been in use for years. But it measures the thickness of the air directly—and since the mechanical dimensions are fixed, the only variable is the density of the air between the radiating source and the detector.

Used as a DC device, it measures the absolute density of the medium between post and detector—great for meteorology.

As an AC device, it measures the density and rarefaction waves in the air—which *are* sound waves.

Instead of having sound waves move diaphragms that push on coils or twist crystals—it measures the density of the sound wave itself. There is no intermediate mechanical system—as there is even in the laboratory standard type condenser microphones. Even they have mechanical diaphragms that are mechanically moved by the sound-pressures.

This new prototype has no mechanical coupling devices whatever; it operates directly at the subatomic level. Since the beta-ray electrons travel at a large percentage of light-speed, it's no great wonder the device can be made to react at tens of megacycles—and, of course, will have no low-frequency limit.

It can, I think, be microminiaturized quite efficiently.

As to stability—if Carbon-14 were used as the emitting isotope, the mike would lose half its sensitivity in 5,700 years or so. Nickel-63 would have a half-life of 90 years, which should be adequate for most purposes.

There is a considerable variety of low-energy beta-emitting isotopes to select from; an alpha-emitter could probably be used too, if more variety of energy, half-life, and probable path-length in air is needed.

Any number of variations of design is possible—but the essential thing is that an Elegant Solution has been developed.

And . . . it's a case of, "Oh, for Pete's sake—how obvious! Now why in blazes didn't *I* think of that years ago? !" ■ The Editor

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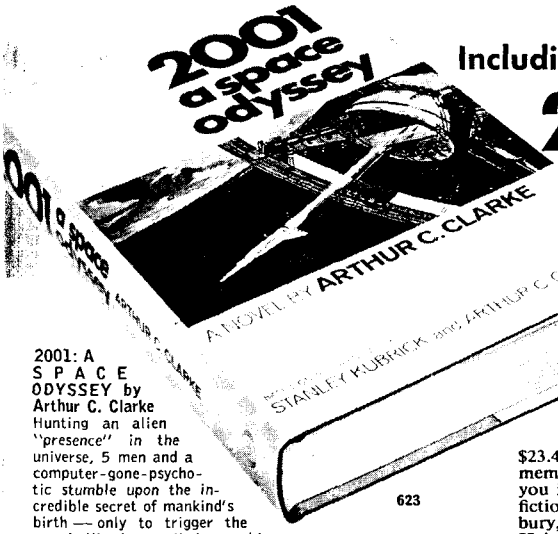

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